

R E P O R T R E S U M E S

ED 003 550

56

TELEVISION UTILIZATION IN THE OBSERVATION PROGRAM FOR TEACHER EDUCATION.

BY- ROGERS, WILLIAM R.

SAN JOSE STATE COLLEGE, CALIF.

REPORT NUMBER NDEA-VIIA-093

PUB DATE 62

GRANT OEG-704001

EDRS PRICE MF-\$0.18 HC-\$2.36 59P.

DESCRIPTORS- *TELEVISION, *TEACHER EDUCATION, SCHOOL SYSTEMS, ECONOMICS RESEARCH, COLLEGES, *OBSERVATION (RESEARCH), *CLASSROOM RESEARCH, CLASSROOM ENVIRONMENT, *CLASSROOM TECHNIQUES, SAN JOSE, CALIFORNIA

A STUDY WAS CONDUCTED TO INVESTIGATE THE EFFECTIVENESS OF TELEVISION OBSERVATION. THE OBJECTIVES WERE TO DETERMINE WHETHER TELEVISION COULD (1) REDUCE THE AMOUNT OF DIRECT OBSERVATION OF PUBLIC SCHOOL CLASSROOM ACTIVITIES NECESSARY IN THE TRAINING OF TEACHERS, (2) EFFECT ECONOMIES IN THE USE OF INSTRUCTIONAL TIME VIA MULTIPLE-SECTION TELEVISION VIEWING, (3) EFFECT ECONOMIES IN THE USE OF STUDENT TIME, AND (4) INCREASE THE CAPACITY OF THE AVAILABLE PUBLIC SCHOOLS TO PROVIDE OBSERVATIONAL EXPERIENCES. THREE EXPERIMENTAL GROUPS AND TWO CONTROL GROUPS WERE SELECTED EACH SEMESTER FOR FIVE SEMESTERS. EACH GROUP WAS COMPOSED OF 20 STUDENTS. TWO TYPES OF DATA WERE COLLECTED FROM EACH GROUP (1) THE CONTROL MEASURES INCLUDED COLLEGE SCHOLARSHIP, ACADEMIC APTITUDE, AGE, SEX, AND PREDICTED SUCCESS AS A TEACHER, (2) THE CRITERION MEASURES INCLUDED AN ASSESSMENT OF EACH STUDENT AFTER COMPLETION OF THE COURSE "ELEMENTARY SCHOOL CURRICULUM AND OBSERVATION," AND AFTER A SEMESTER OF STUDENT TEACHING. THERE WERE NO MEASURABLE DIFFERENCES ON THE CRITERION MEASURES BETWEEN THE EXPERIMENTAL AND CONTROL GROUPS. (HB)

ED003550

093

FILE COPY

Television

Utilization

in the



Observation Program

for

Teacher Education

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education

This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

Principal Investigator:
William R. Rogers
Professor of Education

Divisions of Education and
Audio Visual Services
San Jose State College
San Jose 14, California
1959 - 1962

TELEVISION UTILIZATION IN THE OBSERVATION PROGRAM
FOR TEACHER EDUCATION

By

Principal Investigator
William R. Rogers, Professor of Education
San Jose State College
San Jose 14, California

Title VII
National Defense Education Act of 1958
Grant Number: 704001

The Research Reported Herein Was
Supported by a Grant from the
U.S. Department of Health, Education, and Welfare
Office of Education

1959 - 1962

FOREWORD

The program of research herein reported was supported by the Educational Media Branch, United States Office of Education, Department of Health, Education, and Welfare, under grant number 704001 awarded under Title VII of the National Defense Education Act of 1958, Public Law 85-864, 85th Congress, and conducted at San Jose State College, San Jose, California.

This research was carried out within the regular teacher education program of the Division of Education, Elementary Education Department, with the cooperation of the Division of Audio Visual Services, Instructional Television Center, at San Jose State College. Specifically, the research project was utilized in two of the professional education courses required of all undergraduate candidates seeking the general elementary teaching credential at the College.

The personnel who contributed to or participated in this study were numerous. Special appreciation is expressed to those professors in the Division of Education who taught the experimental and the control groups of students involved in this study. At times their teaching burdens were greatly augmented by virtue of their relationship to the research project. Among those were Paul C. Blake, Gertrude B. Corcoran, Donald R. Ferris, Kenneth A. Johnston, and Patrick J. Ryan. Staff members of the Division of Education who had primary responsibilities in administrative and research phases of the study were Professors Ruth O. Bradley, Project Planning and Research Assistant; John M. Hofstrand, Project College Coordinator; William R. Rogers, Principal Investigator; William S. Wagner, Project Television Coordinator; and John C. Woodward, Project Statistician. Professors Charles C. Carter and Viola Owens also contributed in some phases of the project. To Professor Clay S. Andrews goes most sincere appreciation for his contributions to the preparation of the original study and his teaching of one of the control groups during the first semester of operation of the project.

Except for the unusual facilities and services provided by the Division of Audio-Visual Services and the Instructional Television Center, this research project could not have been undertaken. Professor Richard B. Lewis has been the spearhead of these services as well as the initiator of the idea on which the research was based. Professor Gaither Lee Martin has directed the scheduling and the technical and mechanical aspects of the

television services. Professor Jerrold E. Kemp has acted as consultant in graphics.

This research project could not have been undertaken without the services of many technicians, stenographers, and assistants. Acknowledgment and appreciation is extended to many who were at one time associated with the study, and by name to those who were associated throughout or during the terminal stages. Among the latter were: administrative assistant David D. Cram, statisticians William M. Resch and Robert M. Dickover, Senior Technician Robert L. Stapleton, Technicians Glen Pensinger, Richard H. Anderson, and William N. Johnson, graphic-artists Ronald G. Carraher and Sue Baker Pfaffl, and stenographers Jeanette A. Akin and Lois E. Madsen.

Unqualified appreciation is expressed to the Board of Education of the San Jose Unified School District, its Superintendent, Dr. Earle P. Crandall, and its Assistant Superintendent, Curtis Davis, for their willingness to participate in the research. Special acknowledgment is extended to Principals Mary Dalesandro, Adeline Fraleigh, and Mary Gurovich, for their cooperation. It would be difficult to overestimate the value of the efforts of five San Jose public school teachers who worked as cooperative members of the research study team---Miss Thelma Barnwell, Mrs. Annie Cowan, Mr. Kermit Hartley, Mrs. Roberta Miller, and Miss Mary Aleen Pett. Mrs. Laura Lico and Mrs. Hazelwood Slover assisted during one semester. Appreciation also is expressed to the pupils of the Horace Mann and Selma Olinder Elementary Schools.

The encouragement and assistance of the President of San Jose State College, Dr. John T. Wahlquist, and of his administrative and business staff were most helpful. Dr. William G. Sweeney, Dean of the Division of Education, and Dr. Lowell G. Keith, Head of Elementary Education, have given the research team continuing support and approval for which it has been most grateful. Special acknowledgment for his critical readings of the original study proposal is extended to Dr. Edward W. Minium, Head, Department of Psychology.

William R. Rogers
Principal Investigator
Elementary Education Department
Division of Education
San Jose State College

PRECEDING PAGE BLANK-NOT FILMED

TABLE OF CONTENTS

Foreword	iii
Chapter 1 Introduction	1
Chapter 2 Organization	11
Chapter 3 Presentation	17
Chapter 4 Analysis and Results	31
Table I - College Qualification Test Means by Group	31
Table II - Grade Point Average by Group	32
Table III - Faculty Rating Sheet Mean Scores by Group	33
Table IV - Evaluation of Elementary School Curriculum and Observation Mean Scores by Group	33
Table V - Evaluation of Student Teachers Means by Group	34
Chapter 5 Summary and Discussion	35
Appendix A - Faculty Rating Sheet (Form).	37
Appendix B - Evaluation of Student Observers (Form).	41
Appendix C - Evaluation of Student Teachers (Form)	45
Appendix D - Typical Project Calendar	49
Appendix E - Refinement of Technical Procedures	53
Appendix F - Analyses of Variance and Covariance, F-Values	59

INTRODUCTION



The origins of this study are to be found in at least four continuing developments which have reached pressure levels during the decade commencing in 1950. The first of these was the population increase in California resulting from a major immigration approximating 300,000 individuals annually.¹ To this number of newcomers was added, of course, the increment of births which followed the national upward trend. The second development was found in the critical shortage of qualified school teachers in California.² The third involved the invention and adaptation of new technical means of communication. The implications for teaching and learning which these inventions suggested provided almost unlimited opportunity for experimentation and research which might be expected to contribute new knowledge to the field of learning.³ Finally, the fourth factor was a massive outburst of criticism against all facets of public education.⁴ The people, not only of California but of the United States as a whole, were vigorously concerned with the practices and the content of education.

It was in this period and at this stage of concurrent developments that the following research program was proposed.

1. The World Almanac, 1959, and Book of Facts, New York: "New York World-Telegram and The Sun," Harry Hansen, Editor, 1959.
2. "Teachers for California's Schools," California Schools. Sacramento: California State Department of Education, August, 1958, 450-453.
3. Stoddard, Alexander, Jr., Schools for Tomorrow. New York: The Fund for the Advancement of Education, 1957.
4. Scott, Cecil Winfield, The Great Debate: Our Schools in Crisis. Englewood Cliffs, N.J.: Prentice-Hall, 1959.

Statement of the Problem

It was proposed that a three year research program be conducted by the Division of Education with the cooperation of the Division of Audio-Visual Services at San Jose State College to determine whether or not by the use of television the program of in-person observation in public schools could be reduced.

Importance of This Research

The rapid growth of the College had created serious problems:

1. By placing an excessive burden on the public schools within practical traveling distance to provide sufficient classrooms for student-observers as well as student teachers
2. By making it increasingly difficult to obtain sufficient situations where observers could see qualified classroom teachers at work

Related Research

Several experiments had been reported on utilization of closed circuit television in teacher education. At San Jose State College, studies and operational programs conducted via television had, in general, supported the findings of these experiments. Summaries of selected studies reporting on the problem of this research follow:

Keller, Robert J., 1957, Closed Circuit Television in Teacher Education. 65 p. Minnesota: College of Education, University of Minnesota. This research project, under a grant from the Fund for the Advancement of Education, investigated six major areas of television utilization in education. The area relating to the present proposal

was "CCTV as a Classroom Observation Technique." A summary of the results of that investigation indicates that television can be used in observation: (1) to provide pinpointed illustrations of specific features of the teacher-learning situation, such as principles, teaching techniques, curriculum, and pupil characteristics; (2) to show all aspects of the teacher-learning situation woven into one inter-related pattern; and (3) to provide all observers with a common observation experience and a common frame of reference upon which to base subsequent discussions.

Instructional Television Summary, 1958. 65 p. mimeographed report. New York: State University of New York, Teachers College at Brockport. This research project was sponsored by the New York State Department of Education. The investigation involved three major areas: (1) Teacher Education Observation and Methods, (2) College Direct Teaching, and (3) Elementary School Direct Teaching. The results indicated: (1) that large numbers of (college) students can be taught at one time; (2) that college students can make practical application of what they are learning by observation of children at each age level.

Clemens, Thomas D., 1956. Television and Teacher Education, 56 p. mimeographed report. California: San Jose State College, San Jose. A comparison of the relative effectiveness of in-person observation and closed circuit television observation in elementary teacher education at San Jose State College. Results: Evidence indicates that television observation before in-person observation is significantly more effective than television observation only, in-person observation only, or television observation after in-person observation.

Television Project Study Report #1, 1958. 214 p. mimeographed report. California: San Jose State College, San Jose. Sponsored by the California State Department of Education, this study involved two broad areas: (1) Observation, and (2) Direct Teaching by Television. Conclusions: (1) Those faculty members who used television very little retained their original attitude, whether positive or negative, throughout the program. Those instructors who used television more extensively tended to become more and more favorable as the program progressed. (2) The attitude of a class reflected the attitude of its instructor. (3) The students agreed that unguided obser-

vation was of little value, but observation guided by an instructor had meaning and value.

TECHNICAL RESOURCES AND PERSONNEL

As early as 1955, exploratory tests in observing public school classrooms by television had been made by the College. The Education Division and the Instructional Television Center had shared these experiences. By 1956, a complete system for television transmission from public schools to rooms on the college campus was available.

Technical Resources¹

The college television system included a mobile television control center which moved to public schools near the College on a schedule required by the instructional program. In this trailer unit, a technician and a college instructor (for the purpose of the project designated Television Coordinator) operated remote controls on all cameras placed in the classroom and determined appropriateness of views to be utilized. Here, too, accompanying sound was controlled. The Television Coordinator in the trailer had two-way communication with the College during viewing. A separate intercommunication unit solely for communication on technical problems was available to the technician.

In the public school classroom, three vidicon television cameras, remotely controlled in all functions were placed according to instructional requirements. Auxiliary lights were installed as required to augment normal classroom illumination.

Microphones, both wired and wireless, were placed in the classroom. A two-way telephone from the demonstration classroom was connected to the college viewing room through the mobile control center; this channel provided means of direct communication between the demonstrating teacher and the Planning and Research Assistant at the College during question periods.

In the viewing auditorium at the College standard 23" receivers were used for observation. Two channels were available, and were used simultaneously; normally, on one channel a wide-angle view of the classroom was transmitted to

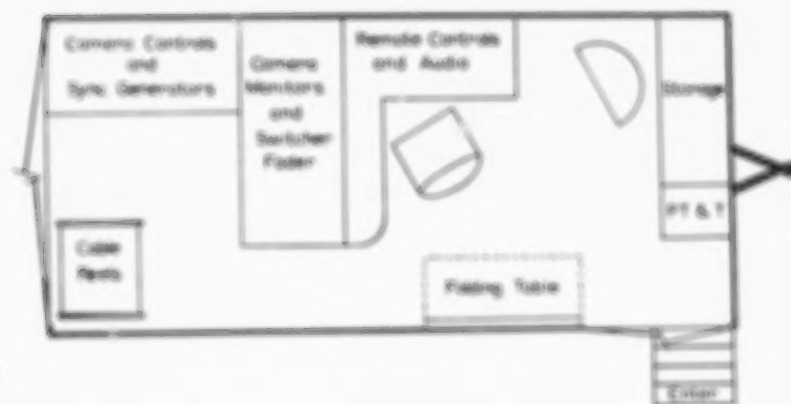
1. A more complete discussion of technical facilities and the refinement of techniques for program transmission is presented in Appendix E for those primarily concerned with engineering aspects of the project.

Student-observers in a classroom often have less than a desirable vantage point from which to see and hear; in-person observation cannot be guided by a professional with whom they can discuss events as they occur.



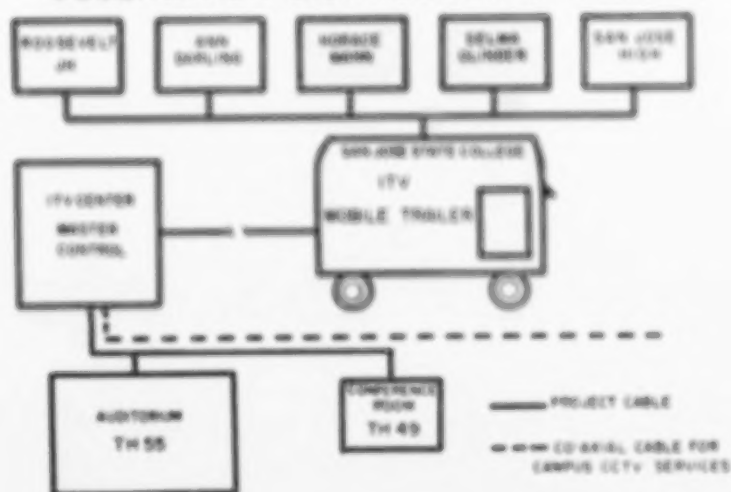
Television cameras and microphones, strategically placed, can extend the limits of in-person observation and may give selected and significant views of action.





A mobile television unit, conveniently arranged for operating personnel, is the control point between the public school classroom and the college classrooms. Distance is bridged by means of cables.

OBSERVATION DISTRIBUTION SYSTEM



A closed-circuit distribution system for transmitting classroom pictures and sounds, and inter-communication lines for carrying instructions, comments, and questions, provide flexibility, and insure privacy for professional information.



provide viewers with orientation to the total classroom activity; on the second channel, views were presented that were selected from either of the two zoom lens cameras, and were varied as appropriate to report the details of the classroom activities.

The Planning and Research Assistant, having constant communication with the trailer, could request views or could be informed by the Television Coordinator of developing incidents that might be pertinent to the observation. The Planning and Research Assistant could at any time interrupt the sound coming from the television system and could speak to the student-observers over the public address system.

Other resources in the auditorium, and available whenever needed, included such items as a large projection screen, a 10" x 10" overhead projector, a 2" x 2" slide projector, and a tape recorder. To superimpose children's names on the television screen as their pictures appeared, a flying-spot scanner was provided at the mobile control unit; the slides for this unit were manipulated at the mobile unit.

Graphic-photographic resources were provided whenever required for presentation materials, either for use on television or in the auditorium, and for duplicated materials used by the instructional staff or by the student-observers.

Personnel

In addition to the facilities available, the personnel of the Instructional Television Center were experienced in techniques of televising from the public schools and were a resource for undertaking a research project. Numerous members of the staff of the Department of Elementary Education had, over a period of years, used televised observation in a variety of classroom applications. Thus, resources and background for a project to study television in the observation program were present.

OBJECTIVES

The objectives of this research differed from previous related research studies of television in that they sought to determine whether or not, and to what extent, in the training of teachers the controlled use of television observation could act as a partial substitute for in-person observation. Previous studies had indicated that large numbers of college students could be taught simultaneously and effectively via television, and that television observation of public school children in advance

of in-person observation was effective in improving learning. While this study would substantiate and extend these conclusions, if the findings concurred, its primary attention was to be directed toward the potential of television observation to substitute in part for in-person observation.

Specifically, the objectives of this research were to determine whether or not use of television could:

1. Reduce the amount of in-person observation of public school classroom activities necessary in the training of teachers
2. Effect economies in use of instructional time via multiple-section television viewing
3. Effect economies in the use of student time
4. Increase the capacity of the available public schools to provide observational experiences

EXPERIMENTAL DESIGN

The experimental design appeared to be relatively simple. It sought to provide experimental groups of student-observers in teacher education with an introduction to in-person observation in the public schools via controlled televising. In addition, it sought to vary the subsequent amounts of actual in-person observation given to these experimental groups. Their characteristics were to be evaluated and compared not only among themselves but with control groups which were given no televising, but spent the established amount of time in in-person observation.

Specifically the experimental design involved the following definitions, procedures, and schedules.

Definition of Terms

The term Use of Television was interpreted as that amount established by the professional teacher education staff as being essential in order to introduce students to all major aspects of their observational experiences. This service would require twelve and one-half (12 1/2) hours of guided viewing.

The term Elementary Teacher Education Students in this research meant those students enrolled in experimental and control groups drawn from the total eligible population of Education 104, Elementary School Curriculum and Observation. Selection could not be truly random, but was to

be governed by accident of registration. Part of the purpose of data analysis was to check the comparability of groups.

The term Observation in the Public Schools referred to one phase of the teacher education course entitled Education 104, Elementary School Curriculum and Observation as described in the San Jose State College General Catalog of 1958-59:

A laboratory course combining modern theory of education with actual practice through guided observation and participation in two public elementary schools. Five hours per week in the elementary school classroom and five hours per week in the college classroom and curriculum laboratory. Experiences include child study and working with children; using curriculum materials, audio-visual aids and library facilities; individual student-instructor conferences; planning, developing, teaching and evaluating, under guidance, four lessons. Prerequisites: teacher education approval, Ed. 123 (Audio-Visual Equipment Laboratory). Seven units; fall, spring.

Procedures

Each semester three (3) experimental groups of elementary teacher education students were to be established. Each was to be afforded an equal amount of television viewing of planned public school classroom activities. Time allotments would be subject to minor variation from semester to semester due to changes in the College calendar; however, the relationship of television time to in-person observation time was to be held constant at twenty-five per cent (25%) of the established program.

Each of the three experimental groups was to be afforded varying amounts of in-person observation of public school classroom activities as follows:

1. Experimental Group #1 - Television plus 12.5 hours of in-person observation (12.5 hours would represent 25% of the established program)
2. Experimental Group #2 - Television plus 25 hours of in-person observation (25 hours would represent 50% of the established program)
3. Experimental Group #3 - Television plus 37.5 hours of in-person observation (37.5 hours would represent 75% of the established program)

Each semester two control groups of elementary teacher education students were to be established. Each control group was to follow the established teacher education program of in-person observation of public school classroom activities. No television viewing was to be afforded these students. Their schedule was to be as follows:

1. Control Group #1 - No television; 50 hours of in-person observation (50 hours would represent 100% of the established program)
2. Control Group #2 - No television; 50 hours of in-person observation (50 hours would represent 100% of the established program)

To control the effect of the instructor variable, instructors were to be rotated each semester

Three experimental groups and two control groups, as previously described, were to be established each semester for five consecutive semesters. Each group was to be composed of approximately twenty (20) students. Replication of the study would be necessary:

1. To obtain a sufficient number of students to insure a representative sample
2. To insure a random selection of raters, i.e., public school teachers, principals, and college supervisors
3. To insure rotation of college instructors

Random selection of raters and rotation of college instructors was to be an attempt to control possible bias.

Schedules

The following schedule of activities in a typical semester indicates the steps which were to characterize each of the five semesters or phases of the observational aspect of the research program. Basically, a phase would require a period of one college semester. However, it was understood that an interval of preparation would precede, and an interval of statistical analyses and interpretation would follow each semester.

Subject to such alterations as might be warranted to increase the efficiency of the project, the following steps were to be observed in each of the five phases. The Fall Semester 1959-60 is shown as typical of those to follow:

April, 1959

Establish television schedule for the Fall Semester, 1959-60

April to September, 1959

Establish areas of study and activities to be televised, such as: (a) behavior of children, (b) organizational teaching patterns of school and classroom, (c) preparation and use of teaching materials, (d) examples of teaching

Preparation of television lesson outlines and related materials for use by public school demonstration teachers and by college instructors of experimental groups

May and September, 1959

Planning with public school teachers, principals, and pupils to insure optimum returns from television

September, 1959

Planning with television technicians for timing, sound and picture quality, and other technical requirements

Planning with college faculty to insure optimum use of teaching opportunities with television; registration of college students in experimental and control groups; schedules made for television observation and in-person observation

September to January, 1959-60

Accumulation and processing of data on each student in the experimental program

September to October, 1959

Television viewing by students in the experimental groups

October to January, 1959-60

In-person observation in the public schools as assigned in the experimental and control patterns

October to January, 1959-60

Assessment of potential teaching competence of students in experimental and control groups

September to April, 1959-60

Analysis of data

February to June, 1960

Assessment of performance of student teachers

June to September, 1960

Preparation of Interim Reports

Data Collection and Analysis

Two types of data were to be collected for each group. The first type, the control measures, included college scholarship, academic aptitude, age, sex, and predicted success as teacher candidates.

The second type, the criterion measures, included an assessment to be made of each student after completion of the course, Ed. 104, Elementary School Curriculum and Observation, and another evaluation made after the first semester of student teaching.

Control Measures

Information concerning college scholarship, age and sex was to be collected from records on file in the Office of the Registrar and comparability of groups on these factors was to be determined by appropriate statistical techniques.

The College Qualification Test was to be administered at the beginning of each semester, and comparability of groups on V (verbal), N (numerical), I (information), and T (total) ability scores was to be determined by analysis of variance.

The measure of predicted success as teacher candidates was based on professional judgments by college faculty, using the San Jose State College Faculty Rating Sheet (Appendix A). Ratings on this scale were to be converted to numerical data for statistical analysis.

If significant variances were found, analysis of covariance was to be used to control on these factors.

Criterion Measures

Each semester, at the conclusion of the observation course, Education 104, Elementary School Curriculum and Observation, all participating students were to be assessed for potential teaching competence in the following areas:

1. Relationships with children

2. Relationships with staff
3. Teaching techniques
4. Personal qualifications

This evaluation was to be made by means of an established rating scale, Evaluation of Elementary School Curriculum and Observation (Appendix B), submitted by a member of the college professional teacher education staff, by two public school teachers, and by two public school administrators.

Upon completing the observation course, each student was to be assigned, at random, to two eight-week periods of student teaching at two grade levels in cooperating public schools. The performance of each student during student teaching was to be assessed by two members of the college professional teacher education staff, by two public school teachers, and by two public school administrators with whom he had been closely associated during the period of student teaching.

This evaluation was made on an established rating scale, Evaluation of Student Teachers (Appendix C).

Analysis of variance or covariance, as indicated by data from previous analyses, was to be used to compare groups on both these criterion variables.

All data were to be processed for individual groups and combined as they accumulated each semester. This was necessary to evaluate the progress of the research, to determine the effectiveness of the procedures used in the research, and to expose possible areas where further analyses or different analyses might be desirable.

Time Schedule

The total research period, as proposed, began in the Spring Semester of 1959 and was to continue through the Summer of 1962. The observation experiment itself was to begin in the Fall of 1959 and continue through the Fall of 1961, five consecutive semesters, as completed at the conclusion of the Spring Semester, 1962. To establish a sound procedural base for this research project, the Spring and Summer of 1959 were to be reserved for organizational preparation. This preparation period was to provide for the selection of supportive staff, establishment of procedural techniques, and evaluation activities. Analysis of data and preparation of the final report would require at least six months, beginning in the

Spring Semester and continuing through the Summer of 1962.

On June 1 and December 1 of each year of the project, an Interim Report was to be submitted which would summarize the data and the findings of the research to the specified date. Interim reports were to be forwarded to the United States Commissioner of Education, Department of Health, Education, and Welfare, Washington, D.C.

The principal steps in the total research program, arranged in general chronological order follow:

April to September, 1959

Initial preparation of project: staffing, planning, preparation of materials

September, 1959

First Interim Report

September, 1959 to January, 1960

First phase of observation research

February to June, 1960

Second phase of observation research
First phase of student-teacher research

September, 1960

Second Interim Report

September, 1960 to June, 1961

Third phase of observation research
Second phase of student-teacher research
Fourth phase of observation research
Third phase of student-teacher research

September, 1961

Third Interim Report

September, 1961 to January, 1962

Fifth phase of observation research
Fourth phase of student-teacher research

February to June, 1962

Fifth phase of student-teacher research

September, 1962

Final Report on Research Project to United States Commissioner of Education

OUTCOMES

The findings of the research program were to be interpreted as follows:

1. If significant differences were found in favor of the experimental groups, recommendations would be made in terms of the objectives of this research:
 - a. To reduce the amount of in-person observation in public schools by use of television
 - b. To effect economies in the use of instructional time by use of television
 - c. To effect economies in the use of student time by use of television
 - d. To increase the capacity of the available public schools to provide observational experiences by use of television

2. If television observation proved equivalent to the in-person observation, the recommendations as stated above would be made

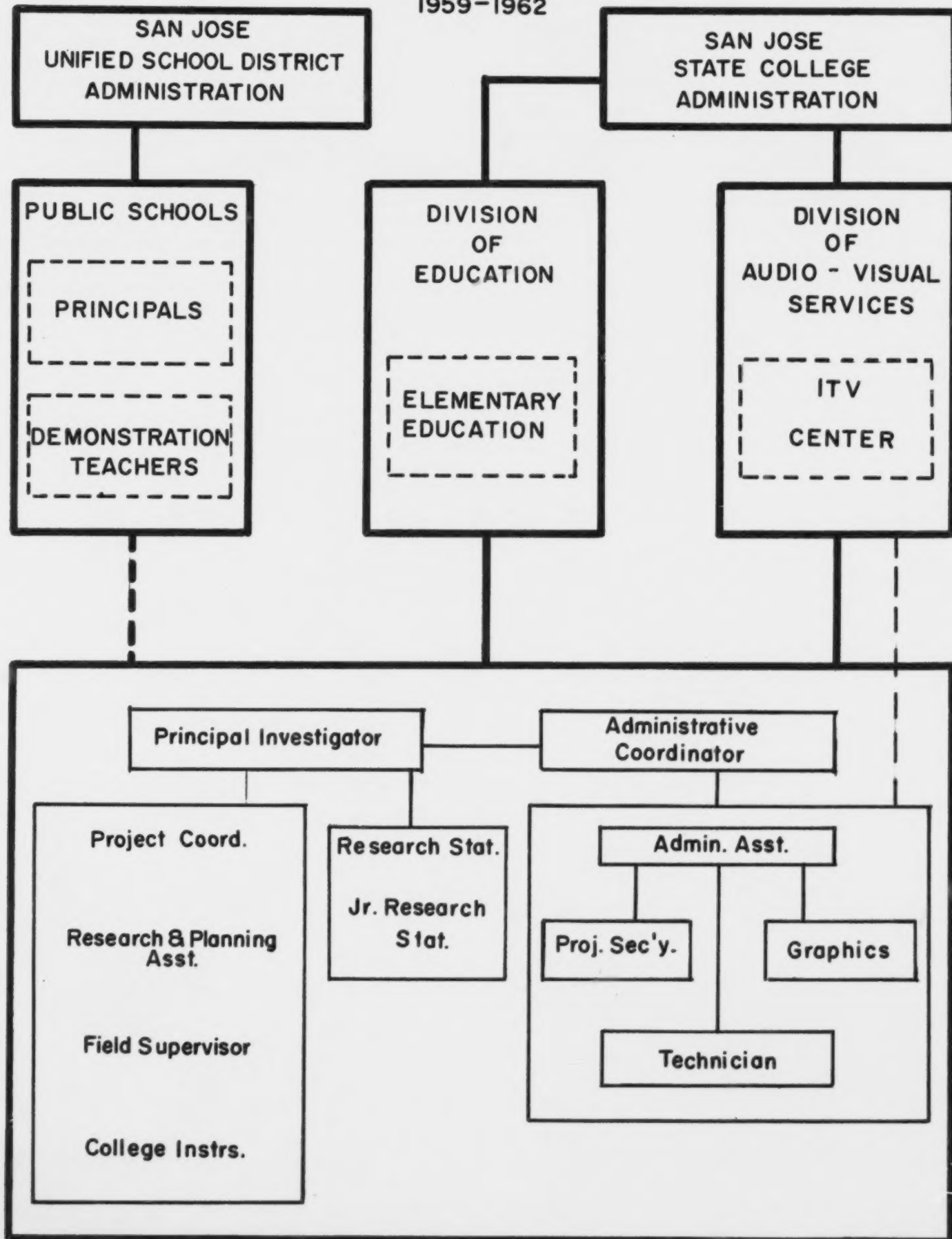
3. If significant differences were found in favor of the established program, recommendations would be made to continue the established program

END PRODUCT

A final report including a review of the research project, the means by which the research was accomplished, the findings, and possible meanings of the research findings for education was to be prepared for the United States Commissioner of Education, Department of Health, Education, and Welfare, Washington, D.C.

SAN JOSE STATE COLLEGE
ORGANIZATION CHART FOR NATIONAL DEFENSE EDUCATION ACT

TITLE VII PROJECT
1959-1962



2

ORGANIZATION



A major administrative effort involved integrating an experimental activity within the ongoing program of the Division of Education. The normal pursuits of both faculty and students had to proceed without disruption, and yet the project had to function within the regular program; this imposed a variety of complications. Concentrated attention to many details proved essential, as had been anticipated, and was reflected in delegation of responsibility to individuals for specific project requirements.

One of the two project coordinators on the research staff, to be designated hereafter as the College Coordinator, was assigned to coordinate the efforts of the college personnel connected with the study; to carry on administrative duties necessary to facilitate the planning, direction, and analyses of operations; and to provide for smooth articulation between the regular college program and that outlined within the study proposal. A period of one semester was needed prior to the beginning of televiewing sessions for orientation of staff, organization of procedures, and development of specific role responsibilities for the many staff members.

Much of the College Coordinator's responsibility in the initial and subsequent planning was divided into six areas:

1. Organizing informational procedures
2. Scheduling
3. Registering students
4. Developing an orientation program for faculty and student-observers
5. Organizing the televiewing environment
6. Scheduling supervisory staff for student-observer in-person teaching

A basic assumption ruled the study group from the beginning: the smoothness and effectiveness with which the three year study could be carried out would depend upon the level of understanding of the total program by all personnel and the responsibility each person accepts as his particular role. Those who had worked on the study proposal were well-informed as to its design and purposes; others were not. Early in the planning period, meetings were organized for the three separate staff groups: administrative, professional, and technical. The general purposes of these meetings were for clarification of responsibilities, outlining of initial procedures, and for discussion of anticipated problems. In addition, each meeting emphasized the study design and the experimental nature of the study. Though initial meetings were usually organized within each particular staff group, occasional meetings were also called bringing all members of the team together to acquaint them with the problems of each group and the interrelated responsibilities of all in the program.

As soon as it became apparent that all staff members understood their roles and the design and purposes of the study, the separate meetings gave way to more and more combined staff sessions. By the end of the planning semester a luncheon meeting once each week had been established for the combined staff and accepted as part of the communications scheme. The informality of these meetings seemed to encourage free expression regarding the development of the study during subsequent semesters and provided opportunities for suggestions for alternative solutions to problems which arose. Occasionally a staff member not directly associated with a specific problem would make the most logical and valuable suggestion toward a solution. Later in the study this weekly luncheon meeting seemed inappropriate because of the multiplicity of details which had little interest or applicability to most of the members or because no information exchange was necessary at the moment. Therefore, the meetings

were dropped in favor of short get-togethers immediately following the first televiewing each week. It soon became apparent, however, that communication and team involvement suffered, and the noon luncheon sessions were reinstated for the remainder of the study.

SCHEDULING

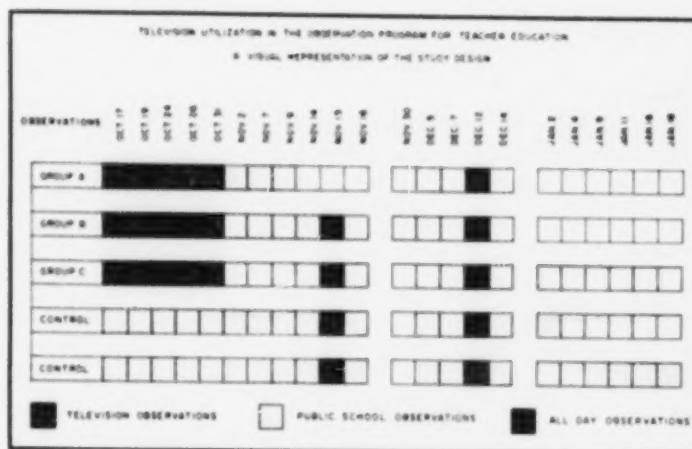
Scheduling had to conform to the general pattern of the college program and was controlled, to a large degree, by the established schedules of the Elementary Education Department. It was one of the assignments of the College Coordinator to act as chief liaison officer between the Elementary Education staff and the staff of the Instructional Television Center. All matters pertaining to the scheduling of dates for televiewing had to be planned with the Coordinator of Television Services in the Instructional Television Center many months in advance. Even though the Coordinator of Television Services extended the privilege of first choice of dates to the experimental staff for a period of three years, the problems of scheduling around other required courses for student-observers of experimental sections were difficult.

When the basic problems mentioned above had been resolved, an acceptable calendar of dates was worked out with the faculty representative of the Elementary Education Department who was responsible for the public school placement of student-observers and student-teachers. In this manner, each semester, a calendar (Appendix) for the following semester was established with the Instructional Television Center and the Elementary Education Department.

Calendars were distributed to each member of the project team who was concerned with data collecting, teaching, or supervisory duties. They were discussed, and items were clarified at an early meeting each semester. In addition, copies of the calendar were distributed to the student-observers in experimental groups and to all other persons concerned with the project so that the obligations of all participants could be known and met on schedule.

A second and more detailed calendar of responsibility was prepared for project staff members. In this a definition of terms was provided, and specific action dates, due dates, and deadline dates with detailed instructions of responsibilities were listed. To insure that the calendar was understood, and to give opportunity for questions and clarification, it was discussed at length in an early meeting of the total staff.

As the program progressed, part of each weekly luncheon session was devoted to brief reviews of impending dates and staff responsibilities. The calendars were lengthy and did not provide a quick, comprehensive picture of the study design. The need for a visual representation of the total study design was anticipated. A chart representation was developed which could be read quickly and easily and which indicated visually the relationship between televiewing and in-person observation for the three experimental and



two control groups. This chart was found to have particular value in orienting student-observers, resident teachers, visitors, and principals in each phase of the study. Consistent color coding of specific dates and important events was applied to the calendar and to the chart representation.

REGISTERING STUDENTS

College registration normally involved limiting the number of student-observers in each section of Education 104, Elementary School Curriculum and Observation. Large numbers of students in the regular college program were enrolled each semester, and large numbers of students transferred into the program from other colleges, particularly in the fall. The total number of student-observers enrolling for the Education 104 classes was known to vary from one semester to another by as many as eighty. The actual number of sections which might be formed could only be estimated at registration time.

Filling experimental and control sections of Education 104 was one of the problems anticipated at every registration period. Twelve sections were estimated and coding of sign-up sheets for each section was completed. None of the instructors' names appeared on any of the schedules nor on the sign-up sheets, so students signed into the various sections by accident of registration.

However, it was apparent that those sections which met at popular hours would be filled rapidly, leaving a question as to whether or not sections at less desirable hours would be filled. Since three sections duplicated times of other sections, these duplications were withheld at registration until the nine classes covering all scheduled hours were filled. To insure that the three experimental and two control groups would be formed, these were among the nine classes initially opened for enrollment. This procedure was followed in all subsequent semesters and was considered an effective method of obtaining the needed student-observers for experimental and control classes when registration numbers were low. Thus, student-observers enrolled in sections by accident of registration and without knowing that they would be part of the study.

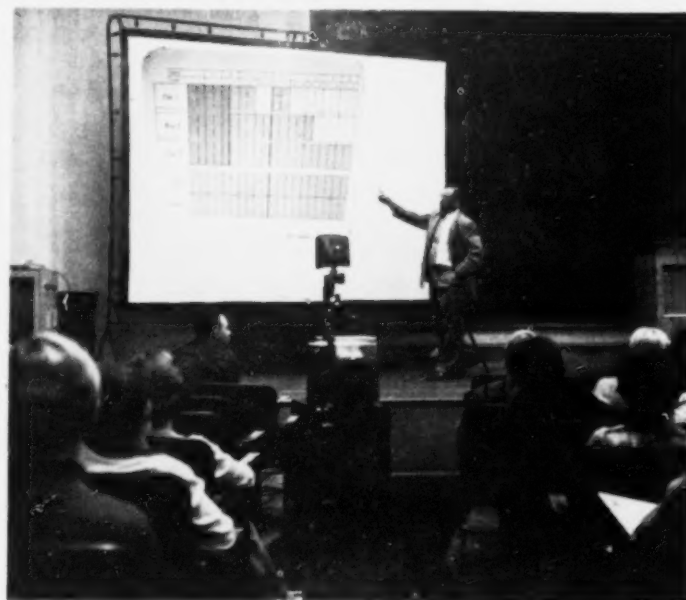
ORIENTING STUDENTS AND FACULTY

On the first day of instruction, student-observers in the three experimental and two control groups were informed of the schedule of testing and observation which would follow. In the beginning of the project many of the student-observers evidenced emotional upset upon finding themselves in experimental groups. The limitations on the amount of time which would be spent in in-person observation in the public schools was the main reason for this upset. Rumors also circulated through the student groups that those in experimental sections would observe children only through television and would not observe children in actual classrooms.

Some schedule conflicts always occur at registration and necessitate changes in programs. Many student-observers, feeling that they would be short-changed by the restrictions of an experimental section, petitioned for changes of program. It was a responsibility of the College Coordinator to meet with student-observers of experimental and control groups to analyze the changes requested and to approve those which were legitimate schedule conflicts. Otherwise classes were maintained as they had been registered. This problem arose each semester as a new phase of the study was begun; however, the impulse of some student-observers to avoid televised observation noticeably lessened as the program progressed. In the final phase of the study no requests for changes of program were entered other than those which involved legitimate conflicts of courses.

In each phase, shortly after instruction began, efforts were made to explain the importance of the study and to provide information relative to the design and procedures of the study. The College Coordinator organized an orientation meeting which involved student-observers and

faculty of the experimental groups; administrative personnel from department, division, and college levels; and the staff of the study. Brief presentations were made by either the Dean of the College or the Vice-President, the Dean of the Division of Education, and the Head of the Elementary Education Department regarding the importance of this research to the profession and to the College. In addition, the design of the study and the procedures and technical facilities necessary to carry it to completion were discussed by the Principal Investigator and the Head of the Division of Audio-Visual Services. Finally, the College Coordinator explained immediate procedures and schedules, and emphasized the professional ethics expected in the handling of the confidential information which the student-observers would receive. This orientation program lasted approximately one hour, and in each phase expressions from student-observers indicated that many doubts had been dispelled.



A second part of the orientation was a visitation by the student-observers and their instructors to the television trailer and to the public school rooms which were to be televised.

As a final step in orientation, the teachers and principals of public elementary schools in which the experimental student-observers were to undertake their in-person observations (following televised observation) were asked to meet in their schools with a member of the project staff. Schedules of visitation to these schools were prepared by the College Coordinator for project staff members. At each of these meetings with public school personnel, the purpose and design of the study were explained by the project staff member. The roles of the public school teachers and principals were discussed and the necessity

for prompt return of student-observer evaluation forms was stressed.

ORGANIZING THE TELEVIEWING ENVIRONMENT

Prior to the beginning of the televiewing sessions, the College Coordinator was responsible for organizing the viewing environment for the experimental groups. Each semester a small auditorium (Tower Hall 55) was made available twice each week between the hours of 7:30 and 11:30 A.M. This room had a sloping floor and 272 seats. The stage provided adequate space for three television receivers and a large projection screen.

The student-observers were seated as close as feasible within comfortable viewing distance of the television sets. Seating cards were given to, filled in, and returned by student-observers in each experimental group. These cards were used as the basis for developing duplicated seating charts of the total seating arrangement. These charts were given to instructors and staff members who were concerned with attendance. Roll was taken by the College Coordinator at the beginning of each televiewing session and after the mid-morning break. Seating for staff members and visitors was planned for an area well to the rear of the experimental groups to allow greater freedom of movement of these people without distraction of the student-observers.

To supplement the televiewing process, arrangements were made to permit student-observers to write questions they might wish to ask of the public school teacher whose work they had been viewing. During the first phase of the study, students wrote these questions on all kinds and sizes of paper. Though seemingly unimportant, this caused difficulty of handling and loss of time in categorizing or synthesizing the questions so that they might be asked in the short time allotted for the question period. For each succeeding phase standardized packets were put together and distributed in advance to the student-observers. The sheets of each packet were duplicated with the Education 104 instructor's name and a place for the name of the questioner in addition to ample space for one or two questions. As a result, organization of the questions for communication to the television teacher was achieved quickly and efficiently. Inclusion of the instructor's name on the question sheet allowed for return of unanswered questions to the correct experimental section. Discussion of such questions could then be handled in the next small group meeting of that section.

It was the responsibility of the College Coordinator to arrange for the distribution of all duplicated materials such as lesson plans, charts, graphs, and instruction sheets to the student-observers or to their Education 104 instructors.

Partly to impress the student-observers and visitors with a concern for the confidential nature of the information being given during the televiewing, but mainly to discourage those not authorized to view the telelessons, signs were placed on the outside of each door entering the viewing room; these indicated the restricted nature of all sessions. This restriction was carried on throughout the study; those who were not invited to attend--including all other faculty members--were asked to leave if they entered. Several school officials and visiting television teachers who were or would be seen by the experimental groups, or who had responsibility for the children being observed, commented favorably because of the security this seemed to provide for both children and teachers. In addition, technical controls were placed in operation during the televiewing, which made it virtually impossible for unauthorized persons to receive either picture or sound from these sessions over other television receivers on the college distribution system.

The College Coordinator consulted frequently with the Coordinator of the Instructional Television Center regarding refinements and alterations in technical matters related to picture and audio communication. The Coordinator and the Technicians of the Instructional Television Center improvised numerous aids, which were considered to be significant contributions to the project.

ORGANIZING SUPERVISORY STAFF SCHEDULES

Each student-observer as part of his in-person observation experience was required to teach a minimum of one lesson in each of two public school classrooms to which he was assigned. At least one of these lessons was to be supervised by his Education 104 instructor or by another faculty supervisor. Instructors of Education 104 forwarded to the College Coordinator schedules of the student-observer lessons to be taught and indicated which lessons they would themselves supervise; the College Coordinator assigned the remainder of the lessons to other faculty supervisors. In all cases the scheduling was completed sufficiently in advance of the teaching so that all personnel could make time available for supervision. Student-observers in most cases delivered their lesson plans to the assigned supervisors and usually were able to

discuss their planned lessons with the supervisors prior to teaching. The greatest amount of such supervisory assistance was necessary for student-observers from experimental group A because of the short period this group was in the field; a more limited amount of supervisory assistance was required for experimental group B; only occasional assistance was needed for experimental group C. In each phase of the experimental project the College Coordinator supervised lessons as did the other staff members to whom these responsibilities were assigned.

At the end of the in-person observation periods, evaluation forms were sent to resident teachers and principals who supervised student-observers. Evaluations also were expected from each instructor of Education 104 for the student-observers in his class. These evaluations formed one facet of the data collected; therefore, every

effort was made to get a maximum return. In some cases a staff member visited schools to pick up unreturned evaluations. The College Coordinator was responsible for working with the research statistician to organize lists of evaluations not returned and to provide avenues through which they might be secured.

The primary function of the College Coordinator during the course of the study was to organize procedures necessary for the smooth operation of the total program. Many of the details were in the nature of "trouble-shooting," and were handled in the most expedient way consistent with the purposes and requirements of the research. These details were not reported because they were specific to the particular program or individual involved and not repetitive. However, the amount of time spent mitigating these problems was significant but was necessary to the facilitation of the presentation procedures.



3

PRESENTATION



The quality of the televised presentations in the college auditorium depended both upon the quality and appropriateness of the views transmitted from the public schools and the guidance and interpretation provided for the student-observers in the college auditorium. Therefore, close coordination was essential between the instructor guiding the observation (the Planning and Research Assistant) and the instructor in the television control trailer at the public school (the Television Coordinator).

To meet the requirements of quality and range of televised experiences considered essential to a professional introduction to classroom observation, both the Television Coordinator and the Planning and Research Assistant found it necessary to become thoroughly informed about the kinds of learning situations deemed important by the project faculty. As the Television Coordinator collected views of activities in the public school classroom, it was the task of the Planning and Research Assistant guiding the observation to provide the commentary on this flow of pictures for the student-observers viewing in the college auditorium. Both of these key individuals needed to be thoroughly prepared in order to insure maximum correlation of the professional commentary and the sequence of pictures. The following items serve as illustrations of the information and preparation needed. Each had to be able:

1. To recognize all pupils in the televised classrooms by name
2. To anticipate what kinds of practices would be employed by the public school teacher in a variety of situations
3. To anticipate where groups of pupils would be working in the classroom
4. To know the theme or the focal point of instruction and learning in each of the televised teaching situations

5. To recognize unexpected or unique experiences occurring in the public school classroom which could contribute to the objectives of the observation lesson

One major group of responsibilities and roles was assigned to the Research and Planning Assistant. Primarily, the duties focused upon the presentation to the college students of the televised observation lessons; these duties, therefore, became diverse and demanding. The techniques which were developed to meet these needs are described below.

ADVANCE PLANNING BY THE RESEARCH AND PLANNING ASSISTANT

The Research and Planning Assistant was responsible for planning with and training public school teachers and college faculty to obtain the optimum instructional performance via television. The role of the Research and Planning Assistant was defined to be:

1. A liaison person to promote understanding between the college instructors of Education 104, Elementary School Curriculum and Observation, and the personnel of the cooperating public school system concerning the program
2. An in-person observer to follow the same procedures which were required of the student-observers subsequent to their televiewing experience (except writing lesson plans and actually teaching)
3. A college instructor to furnish the student-observers with background information about the pupils as an aid to developing observational skills prior to and during the televiewing; to point out the teaching and learning principles being observed during the telelesson; and to set guidelines for most effective use of their observation time

The primary problem for the Planning and Research Assistant was one of anticipating what information would be needed, how it would be collected, the manner in which it could best be organized, and determining when it would fit into the total presentation most effectively.

The series of television viewings was carefully planned so that the student-observers would receive an accurate overview of the scope and sequence of curriculum. An adequate arrangement for this, in the judgment of the research staff, would be the viewing of the first or second grade for two mornings, a third or fourth grade for one morning, and a fifth or sixth grade for the last two mornings. In order to observe an on-going program of skill development, it was considered desirable that the student-observers see reading, social studies, at each of the three selected grade levels; and arithmetic lessons at two grade levels. At least one each of science, music, literature, and other subjects within the curriculum would be presented as time permitted.

Each semester, in advance of the televised observation, the Planning and Research Assistant held conferences with the principal concerning:

1. Types of lessons requested by the instructors of Education 104, Elementary School Curriculum and Observation
2. Due dates for lesson plans from the public school teachers
3. Permission to study and use confidential cumulative records
4. Personal and confidential information about the pupils which was not a matter of record
5. Permission to take pictures of the class members and their homes
6. Arrangements for in-person observation by the Planning and Research Assistant
7. Practice televising sessions for the benefit of the Planning and Research Assistant and the Education 104 instructors
8. Clarification of public school district policies and procedures

Studies of the cumulative records were made to obtain information about the pupils. The cumulative file information about each child was made available to the Planning and Research Assistant, who had the responsibility for interpreting these

data. These data, normally unavailable because of their confidential nature, were released with the understanding that:

1. The student-observers were made aware of their ethical responsibility toward the confidential nature of some of the information
2. The televising audience was composed of those persons qualified, under this program, to be present
3. The Planning and Research Assistant would use the information discretely in making interpretations of practice and principle during the televising

Information gathered about each pupil included:

1. Chronological age
2. Birthplace
3. Home address
4. Family background, e.g., number of siblings, work of parents, language spoken, home conditions
5. Mental maturity test score
6. Achievement test scores
7. General health
8. Special services needed, e.g., speech therapist, school psychologist
9. Grade placement including retentions and accelerations

Conferences with the teachers to be televised were held concerning:

1. Plans for specific lessons to meet the needs of the student-observers in the experimental groups
2. Treatment of materials such as feltboards, chalkboards, bulletin boards, and other physical features of the classroom
3. Seating charts for each class activity to be observed
4. Room arrangement and teaching techniques to obtain maximum sound quality and volume of the children's voices

5. Unusual problems which might occur in the public school classroom which might require special interpretation during tele-viewing
6. Children who had been selected by the Planning and Research Assistant for study in detail because of special aptitudes or special problems
7. Points which the classroom teacher wished to have explained during the interpretation of the telelesson
8. Personal qualities necessary for best television reception including such items as speed of speech, voice quality, and mannerisms
9. Technical considerations such as color and style of dress, and general movement about the room

It was necessary for the Planning and Research Assistant to observe each public school classroom:

1. To relate to the pupils the information gained from the files, to learn the pupils' names, and to observe their behavior
2. To develop sociograms, and to administer attitude and self-appraisal questionnaires

The Planning and Research Assistant met with the graphic artist concerning:

1. Determination of the best media and format for presenting data which had been collected and analyzed
2. Time schedules for preparing visual and duplicated materials



ADVANCE PLANNING BY THE TELEVISION COORDINATOR

Another group of major responsibilities was assigned to the Television Coordinator. One responsibility was to meet and establish friendly and cooperative working relationships with the personnel of the public schools. During planning sessions with them, attention was directed to techniques which could be employed by teachers to augment the effectiveness of the television presentation. Necessary adjustments in the physical environment were discussed. The Television Coordinator explained and demonstrated to the television teachers how suggested changes improved the quality of the television picture and sound. Demonstrations and suggestions such as the following were found to be valuable:

1. Principals and teachers were invited to view their own classrooms on television screens located in the trailer. From this trailer teachers could observe how the pictures were being selected.
2. Principal and teachers were invited to view their colleagues during the scheduled televiewing sessions at the College. This was considered a part of the continuing program of preparation for and improvement of television teaching.
3. Suggestions were offered for optimum placement of groups of pupils working together, as in reading lessons.
4. Teachers were encouraged to direct a series of questions to pupils in one section of a room rather than to scatter them widely. This permitted cameras to be focused on the action and to remain with it for an appropriate interval.
5. The need for large lettering on charts and bulletin boards was demonstrated. Services of the project graphic artist were volunteered where needed.
6. Appropriate personal attire was discussed. Solid colors were advocated. Use of clothing with white collars or blouses, sparkling jewelry, or buttons which might rattle against lavalier-type microphones was discouraged.
7. In some cases teachers were asked to speak more slowly than their normal rate.
8. Always, personal encouragement was

expressed to teachers before they began to teach.

Television Practice Sessions

Two types of television practice sessions were found desirable. The first of these was technical practice in the control trailer where the Television Coordinator guided the Technician as he operated the cameras and the sound controls. Since the Television Coordinator and the



Technician had to function as a team, terminology had to be explicit, and the capabilities and limitations of cameras and sound equipment had to be respected. Considerable practice was required to achieve speed and accuracy.

In addition to the immediate technical understanding needed by the Television Coordinator, it was considered necessary to acclimate television classroom teachers and pupils to the lights, the moving television cameras, and to the audible sounds of the camera motors. Experience indicated that one or two hours of practice with equipment operating in the classroom on one or two mornings would suffice to nullify the novelty of the equipment. Thereafter, pupils seldom, if ever, seemed distracted by the lights, sounds, and cameras.

Another type of practice session, called "staff viewing," permitted the professional staff at the college to observe the teacher and pupils in the public school classroom before regular college class viewing sessions. These practice sessions provided opportunity:

1. To suggest alterations in public school pupil group placements and camera placements to improve viewing

2. To suggest alternatives to improve audio reception
3. To permit televised teachers to ask questions about procedures
4. To permit the Television Coordinator and the Planning and Research Assistant to practice intercommunication teamwork
5. To permit the Television Coordinator and Technician to improve their techniques to meet viewing requirements

Student - Observer Orientation

At the beginning of each semester, the experimental sections of student-observers in Education 104 made a brief visit to the public school classrooms to be televised. It was considered advisable to give the student-observers an in-person perception of the size of the school and of its classrooms, and to provide opportunity for a brief meeting with the pupils, teachers, and principal. No student-observer visit in a classroom was permitted to extend beyond a period of ten minutes. Opportunity also was afforded for the student-observers to visit the television trailer located on the school grounds. The Television Coordinator arranged for this visit with the public school principal according to the orientation schedule for the project.

Routine Checks Prior To Telecasts

Preceding each telecast, routine checks by the Television Coordinator and the television engineer were made at the school to insure readiness for telecasting. These checks insured:

1. That all equipment was functioning (cameras, camera control systems, intercoms, microphones, flying-spot scanner, and classroom lights)
2. That the classroom and the teacher were ready for the telelesson
3. That direct rays of sunlight were eliminated from the classroom
4. That the public school teacher was reminded to look directly into the designated television camera during question-and-answer sessions
5. That the substitute teacher was aware of the specific time schedules for meeting the televised pupils when they were dismissed by the television teacher

THE GUIDED OBSERVATION

Since televised observation was the experimental factor, along with varying amounts of in-person observation, it is believed important to report here the procedures typically used in

the presentations. A summary chart of the schedule of commentary and televie wing is below; reference to this chart will aid in following the description of the procedures.

SAMPLE SCHEDULE OF COMMENTARY AND TELEVIEWING

	FIRST DAY First or Second Grade	SECOND DAY First or Second Grade	THIRD DAY Third or Fourth Grade	FOURTH DAY Fifth or Sixth Grade	FIFTH DAY Fifth or Sixth Grade
P R I O R T O T E L E V I E W I N G					
8:45 to 9:00	General Information Reading Group Relationship	Home Environment	I. Q. Achievement Reading Group Relationship	Preference Chart	Committee Organization
D U R I N G T E L E V I E W I N G					
9:00 to 9:10	Opening	Opening	Opening	Opening	Opening
9:10 to 9:45	Social Studies Planning	Social Studies Activity	Reading	Science	Social Studies
9:45 to 10:00	Question and Answer Period Between College and Televised Teacher				
10:00 to 10:10	Break	Break	Break	Break	Break
10:10 to 10:45	Reading Story	Arithmetic Music	Social Studies	Arithmetic	Language Arts Creative Writing
10:45 to 11:00	Question and Answer Period Between College and Televised Teacher				
F O L L O W I N G T E L E V I E W I N G					
11:00 to 11:15	Sociogram	Summary of one child	Comparison of two different second grades	Summary of self-appraisal by children	Individual variables

On each day of televising, the Planning and Research Assistant arrived at the College auditorium thirty minutes before the student-observers to prepare herself for the morning presentation and to check all materials and equipment she was to use.

Before the televising began, the Planning and Research Assistant made an introductory statement to the student-observers in which it was emphasized that they would be observing personality characteristics of both children and teacher. They would be given information about children, and those children would be identified via the television screen. The student-observers were advised of the confidential nature of the types of information and experience they would be given, and they were instructed as to why they must maintain an ethical and professional approach to any discussion concerning the observation.

The student-observers were told that during the televising, close-ups of pupils' facial expressions and spontaneous reactions might indicate eagerness, disinterest, doubts, enthusiasm, weariness, and such other behavior patterns, the recognition of which would be of value to the teacher in adjusting her instructional procedures.

Certain unique advantages of televised observation which could not be expected from in-person observation were pointed out to the student-observers. With the television camera it was possible to get closer to children without their being aware of this closeness, thus enabling the observer to see the reactions of the children to classroom situations rather than reactions to



the physical presence of a nearby student-observer. With the camera it was also possible

to move quickly from one child to another for the purpose of comparing individual reactions to the same situation. This quick change in viewpoint was further facilitated because of the fullface, profile, or over-the-shoulder pictures obtainable with three cameras.

The fact was stressed to the student-observers and to their faculty instructors that the Planning and Research Assistant was not attempting to give inclusive or pat answers to questions concerning what they observed or to interfere with the educational principles and philosophies being developed in their college group sections following the televising.

The purposes of the Planning and Research Assistant were stated to the student-observers and their instructors as follows:

1. To help the student-observers develop skill in observing children as individuals, the class as a whole, the techniques and methods of the teacher, the physical features of the classroom, the materials used by the teacher, and such other factors as were pertinent to good learning situations
2. To point out teaching principles and practices as they might occur and to relate these to data about the pupils which might enrich the observer's understanding of the situation which was being demonstrated
3. To raise significant questions for discussion in the experimental college class sessions in Education 104, and about which all members of the college class had common observational experience via television

At this point during the introductory statement, a transparency (Fig. 1) was projected which depicted some of the pertinent information about the pupils in the class. The given names of the pupils were listed in alphabetical order because the teachers usually called them by name as they participated, and the student-observers would find it easy to locate the related information on the chart. These data were given to them later in duplicated form for use in their college class groups.

The Planning and Research Assistant augmented the information on the chart concerning those pupils selected for detailed study. Typical of such comments are:

Denny and Sandy are both very young, but seemingly capable, and are in the first

reading group; however, in social relationships Denny is immature and babyish, while Sandy is mature and cooperative.

Randy probably will be noticed as a competent and well-adjusted leader.

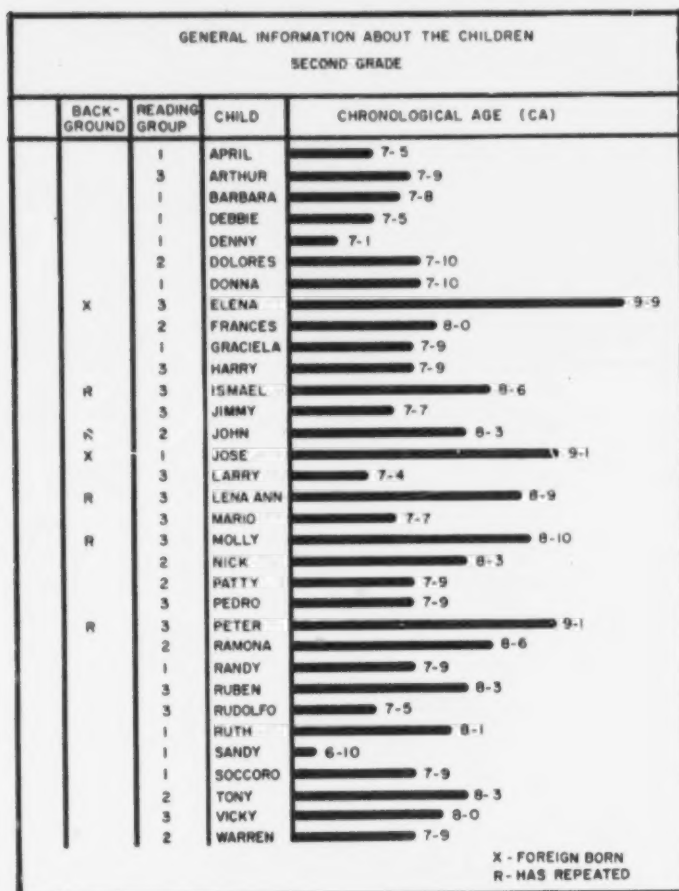


Figure 1

The student-observers were encouraged to observe, as much as possible, any pupil or pupils they wished to follow during the televiewing.



The televiewing began immediately following the introduction. The attention of the student-observers was drawn to the pupils about whom information had been given. It was believed that this would provide a strong motivation for observing and help them to remember pupils more readily. The interest of the student-observers appeared to increase perceptibly as they gained skill in recognizing individual pupils.

As the lesson progressed, other less obvious pupils were called to the attention of the student-observers. At the end of the first hour of televiewing, the student-observers were able to remember many of the pupils by name and recall their behavior in specific situations.

The Planning and Research Assistant was alert to the reactions of the student-observers throughout the televiewing phase of the project. When it was noted that there seemed to be questioning expressions on the faces of some of the student-observers, the audio level was was happening was interjected. When it seemed advisable, this same procedure was used for points which appeared to be unnoticed, although numerous significant situations were allowed to pass without comment in order not to break the continuity of the televiewing. These were decisions which had to be made instantly, and the Planning and Research Assistant tried to take as many cues as possible from the college instructors present as well as from the student-observers.

The cooperating public school system used the "three group" reading program, and the second lesson was a reading lesson. The information shown earlier on Figure 1 was rearranged in another form, Figure 2, showing the grouping of the pupils for reading. In Figure 2 the emphasis was upon chronological age span within each reading group. The purpose was to help the student-observers to gain skill in seeing the same information reorganized in another dimension.

It was noted that the reading ability of the pupils did not necessarily correlate with their chronological ages. Attention was drawn to the fact that the middle group in this class was the most homogeneous in terms of chronological age, and that both groups I and III contained more than a two-year range in chronological age. Background information concerning the children helped the student-observers to understand some of the possible reasons for this spread. The student-observers were directed to watch for other factors which might influence a child's reading development. They were helped to recognize that some of these factors were directly observable.

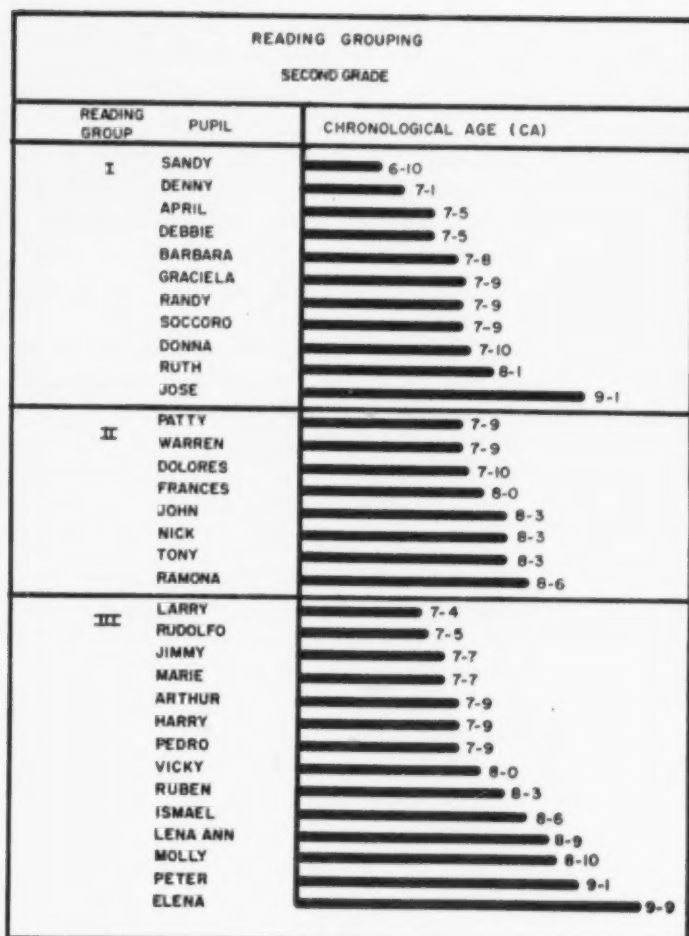


Figure 2

At the end of each telelesson, the classroom television teacher dismissed the pupils for recess, at which point a substitute teacher took them to the playground. This procedure freed the classroom teacher for a fifteen minute period to answer questions from student-observers viewing at the College. Opportunity was given to student-observers to write questions during the tele-viewing. Near the end of each telelesson the questions were gathered and categorized into subject or interest areas by the College Coordinator. It was the responsibility of the Planning and Research Assistant to screen, synthesize, and sometimes reword the questions for clarity. Many of the questions showed insight and careful observation. They were concerned most frequently with philosophy, methodology, district policy, and individual pupils.

These questions were relayed by the Planning and Research Assistant directly to the teacher in the public school classroom through the inter-communication system and were answered by her via television. This immediate communication between the classroom teacher and the Planning and Research Assistant served to clarify many things which the student-observers wanted to know. At this time the classroom teacher was free to explain a personal point of view, to



indicate the policies of the school system, or to state that certain types of questions should be referred to the proper administrative personnel.

The student-observers wrote their questions on specially prepared forms so that the questions ultimately could be directed to the instructors of the respective sections of *Education 104* for further discussion. According to student-observers and college instructors, this dual use of questions was one of the most productive phases of the program.

Occasionally the student-observers listed no questions, but expressed appreciation for the classroom teacher or the techniques used to guide their observation, or for the opportunity to have experienced guided televised observations before their in-person observation with pupils.

At the conclusion of televiewing on the first day, a period of ten minutes was devoted to a discussion of a sociogram (Figure 3). The sociogram was presented as representing another

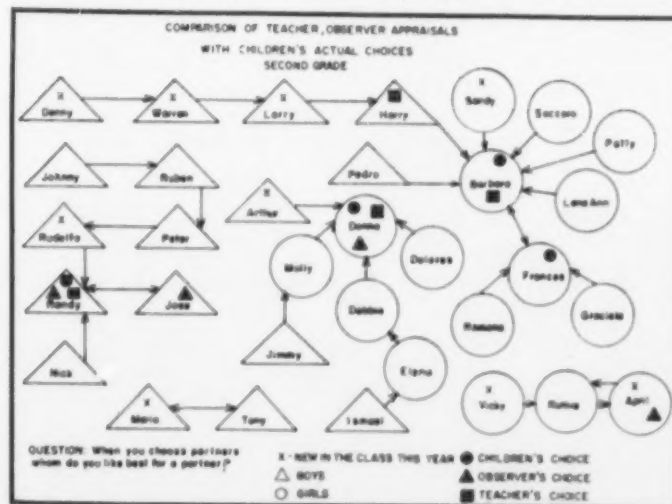


Figure 3

approach to the observation of pupils, and data for it had been collected prior to the televiewing. Since the student-observers would be watching the same class for a second day, the purposes of this discussion were to prepare the student-observers:

1. To observe those pupils who had been selected most often by their classmates
2. To observe the pupils who had made mutual choices
3. To study those pupils whom the teacher and the Planning and Research Assistant had judged would be chosen, but were not
4. To determine, if possible, the reasons for these choices

Several in-person observations had been made by the Planning and Research Assistant, and an acquaintance with the class had been established; then conjecture was made as to which four pupils would be chosen most frequently in a sociometric study. The Planning and Research Assistant, without revealing her own choices, asked the classroom teacher which four she judged that the pupils would chose. The Planning and Research Assistant and the classroom teacher agreed upon the procedure to be followed to obtain the data from the pupils. An individual conference was held with each pupil. In conjunction with efforts to secure accurate data from the pupils



for the sociogram, the Planning and Research Assistant also used this conference as a means of accumulating much added information regarding each child. During each conference, the Planning and Research Assistant showed the pupil pictures of the entire class. She talked with each child about his likes and dislikes,

the things he did after school, his friends and playmates, and other things that might be of interest to him and of importance to the Planning and Research Assistant.



As an introduction to the second day (Chart, page 21), it seemed desirable that the student-observers' knowledge of the pupils be extended beyond the classroom to the home environment from which they came. A part of the information gained from the cumulative files included the home addresses of the pupils. Color 35mm. slides had been taken of the homes and surrounding area by the graphic artist. These pictures were projected for the student-observers. As an example, two illustrations and commentary follow:

A well-groomed second grade girl who came to school from a small but neat home brought with her, her own individualistic set of understandings and capabilities. The well-kept outward appearance of the house, and the neatness



of the child gave evidence of good management. She was the oldest of five children. She did not need to be taught the rudiments of shopping and making change. She had been "going to the bakery" for several years. The bakery unit would have been of little value to her unless the skillful teacher planned an enriching program to meet her needs, as well as those of the rest of the class.

Sitting next to Donna was an equally attractive girl. However, after learning that she was living in a trailer court, and



that she had been in four different schools during her first and second years in school, it, perhaps, was easier to understand why she appeared more interested in getting acquainted with her classroom neighbors than in the lesson being presented at the moment.

The Planning and Research Assistant explained that this might be the reason why the classroom teacher, although it was apparent that she was aware of the inattention, allowed the child to become better acquainted with her new classmates. This kind of interpretation was used to help the student-observers to understand the principle and an application of individual differences.

The place where a child played during his unsupervised time probably offered another indication of the values and standards which he might hold. Some of the play areas for the children in this class were photographed also.

A large, vacant lot, cluttered with bits of broken glass, and having no equip-

ment, was the closest play area for some of the children in the class being observed.



The peer group with which several children identified themselves congregated here. This was observable in the sociogram, and it was noted that this relationship had a definite influence on the behavior of the children in the classroom.

A city park was closer and more attractive to others in the class. Several children had indicated that they played together on Saturday and after school in this park. These children were called to the attention of the student-observers and their relationship, one with another, was noted as they worked together in the classroom.



At the conclusion of televiewing for the second day (Chart, page 21), a review of the work of one child, April, was presented as a summary of the first two days of televiewing. A series of

35mm. slides had been taken of April and of some of her work. There were samples of her art work, her creative writing, arithmetic papers, and reading work sheets. As these illustrations of April's work were shown to the student-observers, it was stressed that this type of information might be used for parent conferences or for the pupil to take home as a weekly progress report, which was the case in this instance. Experience had demonstrated that one of the problems of the in-person student-observer was his inability to observe any pupil in sufficient detail to understand his problems and appreciate his capabilities. Also, it was indicated by the Planning and Research Assistant that records of this type for every pupil were invaluable in the teacher's long-range program of evaluation.

Prior to televiewing on the third morning (Chart, page 21), the student-observers were introduced to data regarding a new group of pupils. Attention was to be focused upon method. The three reading groups in the class would be observed in one of the telelessons. It was stressed in the opening presentation that there were numerous factors involved in the organization of reading groups. Attention of the student-observers was directed to some of the factors of grouping for skill development, including:

1. The potential of the individual as shown by the intelligence quotient scores
2. The achievement of the individual as measured by standardized tests
3. Environmental influences on both the potential and the achievement
4. Physical factors which had a direct bearing upon the individual's attention
5. The teacher's judgment based upon cumulative facts

A transparency indicating the I.Q. scores represented in the class (Figure 4) was projected. The wide range was apparent. An overlay strip for each reading group, with an "X" representing each pupil within the group, had been prepared. As televiewing proceeded and as each group was called to the reading circle, the pupils were identified in their respective places on the chart. The student-observers were directed to observe the reading habits and study skills of the pupils as a partial factor in their achievement in relation to their potential. An example of the commentary to illustrate this was:

Child No. 23 in Reading Group I seemed to be achieving far beyond the

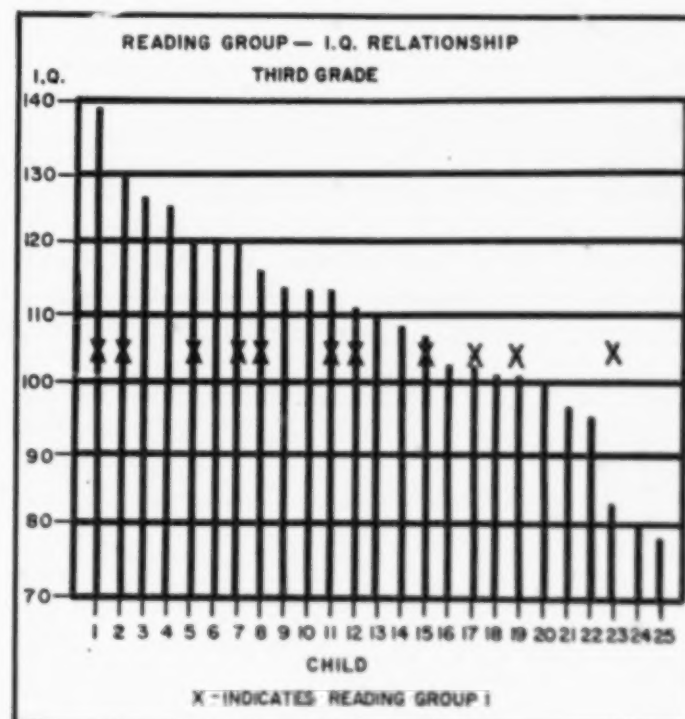


Figure 4

indicated potential. By observing her, via television, her intense desire to please the teacher, her interest in the story, her attention, and her good work habits gave indications of important factors in her accomplishment.

The Planning and Research Assistant added another dimension in understanding the child by supplying the fact that the child's mother often went with her to the public library to select suitable books for home reading.

In the same manner the pupils in Reading Group III were identified and the student-observers were guided to observe pupils who were apparently working to capacity and those who seemed to be under-achievers. As an example of this, one small, listless child often yawned and seemed tired. The Planning and Research Assistant was able to point out reasons for this behavior; the child's health record indicated a malnutrition condition, he had no regular bedtime, and he was allowed to watch some of the late television programs.

The overlay strip for each reading group was adjustable and could be moved up or down the I.Q. range (Figure 4). This was used to show the student-observers, graphically, the importance of the selection of suitable reading material. The overlay strip was used, also, to show how careful selection of individual reading material would be essential in the social studies, science, and library reading programs.

One summary session during each phase of the project was devoted to developing understanding of educational problems of a more general nature. For example, an overlay transparency, (Figure 5) depicted differences in two second grades. Class X_1 was numerically smaller than Class X_2 . The children in Class X_1 were all older than the normal second grade age range,

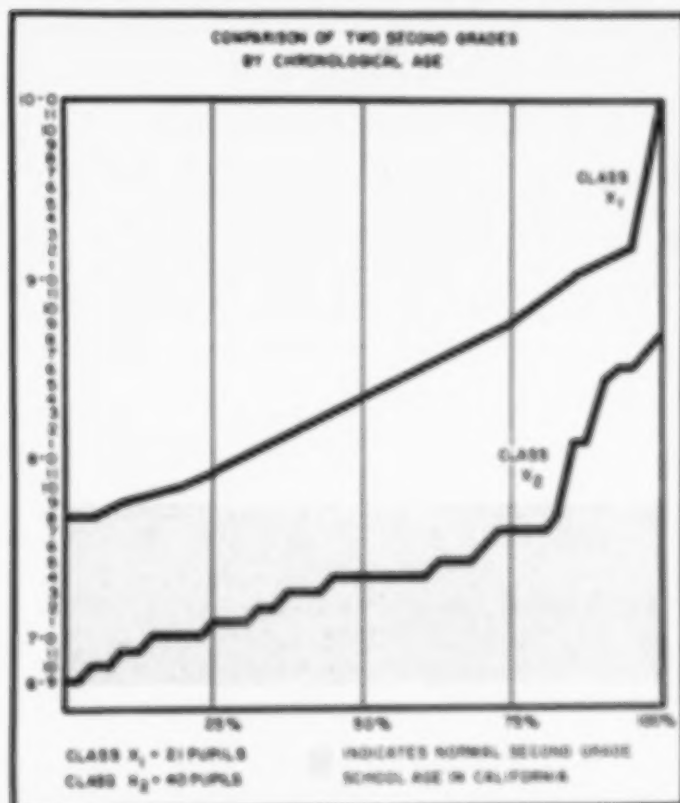


Figure 5

indicating possible retentions, foreign-born and bilingual handicaps, low potential, high degree of population mobility, and like problems. Class X_2 was mostly within the grade age range, none had repeated a grade, few had changed schools, but undoubtedly, there were problems of other types such as wide range of potential, varying degrees of maturity, and diversity of interests.

The major purposes of this transparency and its interpretation were to help the student-observers to recognize that each class was as different as its component parts, and to avoid stereotyping any class or grade level; further, to understand that different public schools might have differing philosophies regarding homogeneous and heterogeneous class grouping.

As another example of a general educational problem, shown in a transparency (Figure 6): In a class of thirty-seven children, twenty had entered this public school system by transfer from widely spread areas. Five were from other California public schools having a fairly common



Figure 6

background of curriculum, but fifteen were from other areas having a wide variety of subject-matter emphasis.

It was pointed out that much adjustment was necessary in the teacher's planning to compensate for this widely divergent pupil background.

For the fourth morning of televiewing (chart, page 21), again with a new public school class, it was assumed that the student-observers were ready for guidance in observing some of the less tangible aspects of teaching. It was emphasized that the attitudes of children toward school in general, toward the subject matter of instruction, toward their classmates, toward their teachers, and toward themselves were all factors which deeply affected learning, and consequently, teaching.

It was pointed out that attitudes were delicate things. One experience, particularly an initial experience, might determine an outlook toward many following experiences. It was recognized that school was only one agency for formulating attitudes. The student-observers were directed to observe closely for indication of the teacher's recognition of and planning for the strengthening of desirable attitudes and re-directing or changing undesirable attitudes.

An attitude questionnaire (Figure 7) had been administered early in the Planning and Research Assistant's in-person observation of the sixth grade class. The children were assured that this was not a test and that all answers were acceptable if they expressed their own opinions. During the televiewing, as the student-observers became more familiar with the pupils, the Planning and Research Assistant indicated which pupils had expressed strong likes or dislikes particularly

Attitude Questionnaire
Sixth Grade

NAME _____

SCHOOL _____

GRADE _____

In each group, put "1" in the blank space for your first choice, "2" for your second choice, and "3" for your third choice. If you don't like any of them, put a "0". If you like them equally well, put and "0" in each place.

reading <u>1</u> arithmetic <u>0</u> social studies <u>2</u>	music <u>0</u> art <u>0</u> poetry <u>3</u>
In physical education: team games <u>1</u> solo dancing <u>3</u> class games <u>2</u>	In art: painting <u>1</u> scrapbook <u>3</u> paper cutting <u>0</u>
In social studies: Which is most important? research <u>2</u> activity <u>1</u> discussion <u>0</u>	Which do you do best? research <u>0</u> activity <u>1</u> discussion <u>0</u>
In language: Which is most important? listening <u>1</u> spelling <u>1</u> speaking <u>0</u>	Which do you do best? listening <u>1</u> spelling <u>1</u> speaking <u>2</u>
In arithmetic: Which is most important? read the problem <u>2</u> know the process <u>1</u> know number facts <u>0</u>	Which do you do best? read the problem <u>1</u> know the process <u>0</u> know number facts <u>2</u>
In reading: Which is most important? speed <u>0</u> vocabulary <u>1</u> understanding <u>1</u>	Which do you do best? speed <u>0</u> vocabulary <u>2</u> understanding <u>1</u>

Figure 7

in two categories, the skill subjects and the fine arts. Incidents which were observed during the televueing took on new meaning in terms of the pupils' attitudes. The student-observers were encouraged to watch for indications that knowledge of the attitudes of the individual pupils in the class had exerted an influence on teacher planning.

A chart (Figure 8) was designed to show the relationships between pupils' attitudes toward the importance of subjects and self-appraisal of their ability in the subjects.

Two examples follow revealing the attitudes expressed toward the relative importance of research, activity, and discussion in the social studies.

Ivan, who had indicated that he liked social studies best, but who was in the second reading

group, felt that the research phase of social studies was unimportant.

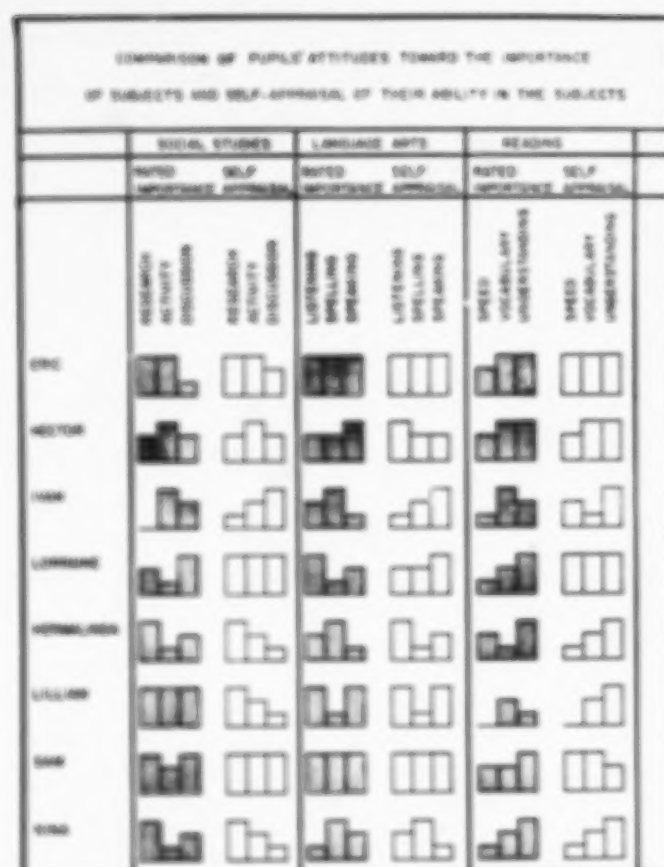


Figure 8

Eric, who indicated that he liked social studies best, and who was in the top reading group, and a leader in social relationships, felt that nearly all phases of the work were important and that he was capable in each phase.

As the telelesson progressed, the student-observers were instructed to select any one of the pupils indicated on the self-appraisal chart and identify evidence that indicated reasons for the child's attitude toward the importance of various aspects of the subject matter, and reasons for his appraisal of himself; and, further, judge the accuracy of his self-appraisal.

For the fifth day of televueing (chart, page 11), a transparency (Figure 9) was prepared for use as an introduction to a social studies lesson to be taught in the public school. The student-observers were informed that committees of pupils had been organized with two factors in mind, their interests and their needs.

The interests of the children had been aroused by an overview of the unit. A series of problems and projects had evolved from their interests. Each of the children had been given three choices to determine on which of the problems or projects

ATTITUDE-ABILITY RELATIONSHIP				
UNIT - CENTRAL AMERICA				
COMBINATION FIFTH AND SIXTH GRADES				
NAME	GRADE	READING	ATTITUDE	
JOHNNY (CH)	5	3		IMPORTANT PLACES
HECTOR	6	1	1	
HERMALINDA	6	3		
JUANITA	6	2	1	
LYDIA	6	2	1	
NINA	6	1		PANAMA CANAL
DAVID (CH)	6	2		
MARY	6	1		
DANIEL	6	1		
LORRAINE	6	2		
LINDA	6	1	3	
MARTHA	6	3	✓	
RONNIE	6	2	1	FAMOUS PEOPLE
ERIC (CH)	6	1	1	
JOYCE	6	1		
SAM	6	2	1	
CHRISTINE	5	2		
ROSE	6	2	✓	
KAREN	6	3	1	PRODUCTS
GLADYS (CH)	6	2	3	
GLORIA	6	1		
ANNIE	6	1	1	
SHERRY	6	3	3	
GEORGE	6	2	3	
PHIL	6	3	✓	
IVAN	6	2	1	WAYS OF LIFE
HENRY (CH)	5	2	1	
LILLIAN	5	1		
KATHLEEN	6	1		
JOHN	6	3		
ROBERT	5	3	1	
LAVERN	5	3	1	
INA	6	3	3	

Figure 9

he would like to work. One choice had been granted in every case.

The needs of the children, as understood by the teacher in terms of the best interests of both the individual and the group, were considered.

By means of the chart (Figure 9) the student-observers were enabled to see the scattering of those who had expressed a strong liking for social studies intermingled with those who had indicated a dislike for it, and that pupils with varying reading abilities were spread throughout the groups. The chairmen for the committees had been elected by the pupils. The social relationships within committees were watched throughout the televiewing. Comments at appropriate times were made by the Planning and Research Assistant concerning the strengths and weaknesses which might be encountered in this type of program.

The summary of the final morning of televiewing usually focused on an analysis of the variables within individual pupils based upon their achievement in three of the fundamental skill

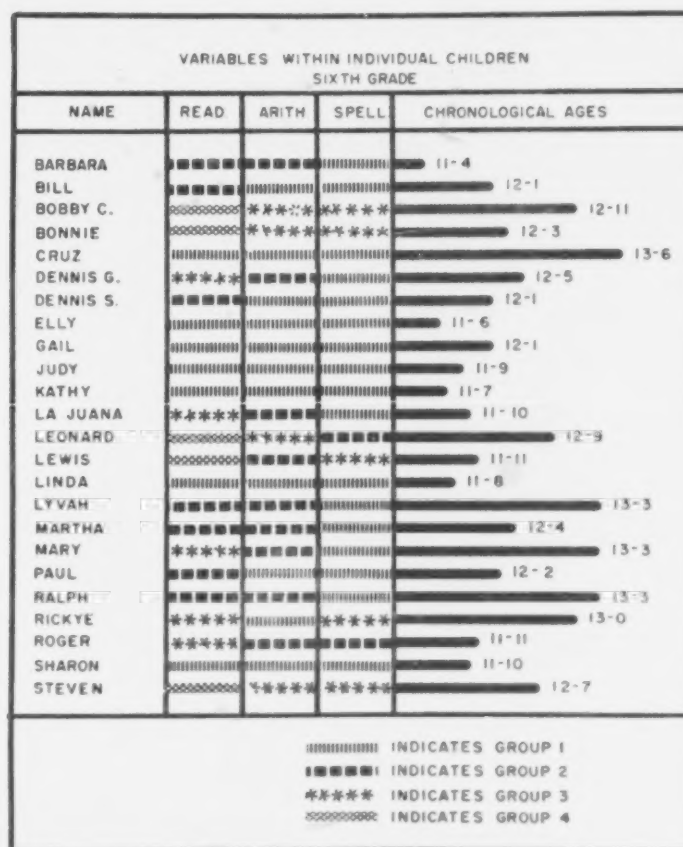


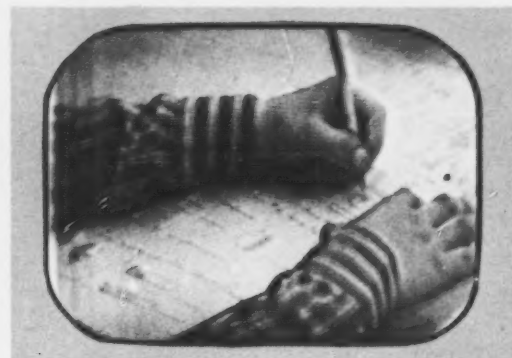
Figure 10

subjects. Figure 10 shows the group placement of the pupils in a sixth grade. It was explained that this type of chart might well be expanded to include the fine arts in order to obtain a broader perspective of the pupils in any given class.

An analysis of these data showed only seven pupils in the top group in all three subject areas; three were in the lowest group in all three areas; five were in a different achievement level for each subject, ranging from highest to lowest. The remainder represented variables in a variety of patterns. It seemed necessary that the student-observers be made aware of the varying achievement levels reached by each individual so that they would learn to avoid generalizing about pupils on the basis of a single variable. After having observed the pupils, and then analyzing Figure 10, it was hoped that the student-observers would understand the importance of variables within each child that affect a teacher's long-range planning.

4

ANALYSIS AND RESULTS



An important part of any research concerns the collection of data and the analysis of these data. The following is a report of this phase of the project.

DATA COLLECTION - CONTROL MEASURES

Information concerning college scholarship, age, and sex was obtained from records on file in the office of the Registrar of the College.

At the beginning of each semester the College Qualification Test was administered to students in both the experimental and control groups. This was done under the supervision of the Research Statistician.

Two Faculty Rating Sheets were given to each project student to take to faculty members who in turn filled them out and sent them to the office of the Research Statistician.

DATA COLLECTION - CRITERION MEASURES

At the conclusion of the semester observation course, Education 104, Elementary School Curriculum and Observation, each student was evaluated by the course instructor, and by the resident teachers and principals who had supervised their observation. The established rating scale, Evaluation of Elementary School Curriculum and Observation, was used for this purpose. These forms were sent to the resident teachers and principals who returned them by mail to the statistical office.

TABLE I

College Qualification Test Means by Group

College Qualification Test Means					
Group	N	Verbal	Information	Numerical	Total
Experimental (25%) *	90	54.46	47.78	23.01	125.24
Experimental (50%)	89	57.69	47.56	22.62	127.87
Experimental (75%)	88	56.03	48.75	23.97	128.75
Control I (100%)	100	58.10	48.43	23.19	129.92
Control II (100%)	96	56.01	49.06	22.28	127.39
Combined Exp.	267	56.05	48.02	23.19	127.27
Combined Cont.	196	57.07	48.73	22.74	128.67

* Percent refers to amount of in-person observation

TABLE II
Grade Point Average by Group

Group	N	Grade Point Average	σ
Experimental (25%)	90	2.71	.36
Experimental (50%)	89	2.75	.40
Experimental (75%)	88	2.71	.37
Control I (100%)	100	2.66	.32
Control II (100%)	96	2.64	.32
Combined Exp.	267	2.72	.38
Combined Cont.	196	2.64	.32

The evaluation of the students on the second criterion measure, performance during student teaching, was accomplished through the use of the established rating scale, Evaluation of Student Teachers. Two members of the college professional staff, two public school teachers, and two public school administrators did the rating. All of these individuals had been closely associated with the student during the period of student teaching. These ratings were returned to the Research Statistician for processing.

Statistical analysis of all available data was conducted at the conclusion of each phase of the research (each semester). Complete written reports concerning semester findings and accumulative findings were filed with the Principal Investigator.

ANALYSIS AND RESULTS - CONTROL MEASURES

Means for the College Qualification Test by group and for the combined experimental and control groups are reported in Table I.

To test the significance of differences noted among the five group means and between the combined experimental and control groups, analysis of variance was used.¹ The results are as follows:

1. F - Values for all analyses are reported in Appendix F.

1. There are no significant differences among the five group College Qualification Test means or between the two major groups, experimental and control, C.Q.T. means. This is true for all C.Q.T. scores: Verbal, Information, Numerical, and Total.

The grade point average for the individual groups and for the combined groups are reported in Table II.

The following is an analysis of these data:

1. The result of an analysis of variance indicates no significant difference among the five group mean grade point averages.
2. The grade point average of the combined experimental group is significantly higher (.05 level) than that of the control group.

Table III is a report of the Faculty Rating Sheet mean scores by group for the five semesters.

The differences noted among the means reported in Table III are not significant among the five groups, or between the combined control and experimental groups.

ANALYSIS AND RESULTS - CRITERION MEASURES

The mean scores obtained for the Evaluation of Elementary Curriculum and Observation are reported in Table IV.

TABLE III
Faculty Rating Sheet Mean Scores by Group

Group	N	Faculty Rating Sheet	σ
Experimental (25%)	90	3.97	.34
Experimental (50%)	83	3.99	.35
Experimental (75%)	87	3.95	.34
Control I (100%)	97	3.98	.32
Control II (100%)	94	3.97	.34
Combined Exp.	260	3.97	.36
Combined Cont.	191	3.97	.33

To test the significance of the differences in means among the five groups and between the two combined groups (experimental and control), analysis of covariance was used. It was found necessary to utilize this technique because of the significant difference in grade point averages noted in the analysis of the data reported in Table II. Analysis of covariance, by incorporating elements of the analysis of variance and of regression, provides a test of significance for comparison of the groups, with a control placed on the differences of a variable known or suspected to influence the criterion outcome. In this analy-

sis the control was placed on the grade point average. In this way, the differences noted among groups being compared on criterion measures could be tested with the influence of grade point average on the criterion outcome controlled.

The result of this analysis for the differences in mean scores for the Evaluation of Elementary School Curriculum is that the differences noted in Table IV are not significant among the five groups or between the combined control and experimental groups.

TABLE IV
Evaluation of Elementary School Curriculum and Observation
Mean Scores by Group

Group	N	Evaluation of Elementary School Curriculum and Observation Means	σ
Experimental (25%)	90	3.84	.35
Experimental (50%)	89	3.88	.33
Experimental (75%)	88	3.90	.38
Control I (100%)	100	3.80	.52
Control II (100%)	96	3.83	.37
Combined Exp.	267	3.87	.35
Combined Cont.	196	3.81	.46

TABLE V
Evaluation of Student Teachers Means by Group

Group	N	Evaluation of Student Teachers Means	σ
Experimental (25%)	83	4.00	.47
Experimental (50%)	78	4.02	.42
Experimental (75%)	78	3.93	.50
Control I (100%)	85	3.94	.62
Control II (100%)	86	3.99	.48
Combined Exper.	239	3.98	.47
Combined Cont.	171	3.96	.55

Means of the Evaluation of Student Teachers were computed for all groups. A summary of these results is found in Table V.

The results of the comparison of these means by analysis of covariance yields the following information: Mean differences for Evaluation of Student Teachers are not significant among the five groups or between the combined experimental and control groups.

SUMMARY OF RESULTS - CONTROL MEASURES

1. Differences among the five groups and between the combined experimental and control groups on the College Qualification Test are not significant.
2. Grade point average means are not significantly different among the five groups, but are significantly different between the combined major groups, experimental and control.
3. Differences noted among the Faculty Rating Sheet means for the five groups and between the two major groups are not significant.

The results of the control measure analysis indicate a need to control on the differences in grade point average. Analysis of covariance was used,¹ therefore, in the analysis of the criterion

measures, Evaluation of Elementary School Curriculum and Observation scores, and Evaluation of Student Teachers scores, to control on this factor.

SUMMARY OF RESULTS - CRITERION MEASURES

1. The means for each of the five groups for the Evaluation of Elementary School Curriculum and Observation are not significantly different. This finding is true also for the means of the combined experimental and control groups.
2. Mean differences for Evaluation of Student Teachers scores are not significant among the five groups or between the two major classifications.

The findings of this research indicate no measurable differences in the results of public school observation via controlled television plus decreased amounts of in-person observation, and observation involving greater amounts of in-person observation alone.

These results are the same for the evaluation of students at the completion of the observation course experience, and for student teaching evaluation.

1. See Appendix F.

5

SUMMARY AND DISCUSSION



The findings of this research project indicate that planned observation of public school activities via controlled television plus decreased amounts of in-person observation is as effective as the total established amount of in-person observation. This is true whether or not the students receive twenty-five, fifty, or seventy-five percent of the full amount of in-person observation plus the controlled television. The controlled television observation in this research project (twelve and one-half hours) amounted to twenty-five percent of the normal in-person observation requirement.

In view of these findings the recommendation of this research is to reduce the amount of in-person observation in public schools by the use of controlled television. The results of this would be:

1. To effect economies in the use of instructional time
2. To effect economies in the use of student time
3. To increase the capacity of the available public schools to provide observational experiences

DISCUSSION

As a result of experience and the findings of this research project, it would appear that the use of controlled television in the observation phase of teacher education programs can effect economies in the following ways:

1. By reducing the total amount of observation of public school children and classroom activities. In this research project at San Jose State College it was found that observation could be reduced by fifty percent without measurable loss of compe-

tencies by student-observers in the teacher education program

2. By reducing observation course unit values. This would be a direct reflection of economies in the use of time indicated in the preceding point
3. By reducing the amount of time requested of cooperating public schools which provide facilities for in-person observation. In this research project it was found that the amount of time requested for in-person observation could be reduced by seventy-five percent. As a corollary of this, a given public school could accept two or three times as many student-observers as heretofore without allotting any additional time above current practice
4. By reducing the total time invested by students in observation and by reducing the cost of travel to and from public schools in which in-person observation heretofore has been scheduled. In this research the reduction of observation time amounted to fifty percent and the reduction in cost of travel was seventy-five percent
5. By reevaluating the traditional separate course status of observation and of student teaching. The findings of this research indicate that the possibility exists that observation via controlled television could serve as an introductory phase of student teaching.

Interest of student-observers can be created and their attention can be sustained:

1. When sufficient time is allocated to permit the professional staff to make thorough preparation of data regarding the pupils, teacher, activities, and environment of the public school classroom which is to be televised

2. When accurate and informative visual materials are prepared to provide information about the children to be televised
3. When the professional staff commentator is completely informed regarding the subjects being viewed via television and is able to inject both information and interpretation during televising when appropriate or when requested by student-observers
4. When the professional staff member who directs the selection of televised sequences (pictures and sound) works to complement the commentator
5. When technical staff members operating the television facility participate in those planning sessions where the objectives and procedures for the observation lesson reveal picture, sound, and intercommunication requirements
6. When technical staff members are, through practice and experience, aware of and respond to the objectives of the observation and work to complement the activities of the commentator
7. When public school teacher and pupils are involved in the preplanning for the televised observation lessons and are aware of the purposes of the teacher education staff
8. When student-observers understand the objectives of instruction via controlled television
9. When student-observers recognize the advantages and the limitations of televising
10. When student-observers are guided to see and recognize the primary responsibilities of a classroom teacher as a director of learning

11. When the public school teacher can discuss with or respond to the questions of student-observers either via intercom and television or by personal appearance at the college
12. When the public school teacher is granted extra time in which to prepare for and to follow up television preparation and teaching. Either a substitute teacher, a teacher-aid, or a reduced teaching assignment is considered essential to achieve quality returns

RECOMMENDATIONS FOR FURTHER RESEARCH

As an outgrowth of experiences in this project, the following are recommendations for further research:

1. Investigate the effect of observation via controlled television without in-person observation
2. Investigate the effect of the use of varying amounts of observation via controlled television with varying amounts of in-person observation
3. Investigate the effect of varying the size of a viewing audience of student-observers with controlled television
4. Investigate the relative effectiveness of kinescoped or videotaped observation lessons in comparison with live presentations. Determine what modifications of presentation techniques are required because of recorded observations. Determine the merits and limitations of accumulating a library of recorded observation experiences and techniques for their optimal use

APPENDIX A

FACULTY RATING SHEET

PRECEDING PAGE BLANK-NOT FILMED

RATING SHEET
CANDIDATES FOR TEACHING

Name of Student _____ Credential _____ Teaching Major _____
Teaching Minor _____

Instructions: Check the place on the line which indicates your rating of the candidate. Do not check the items which you do not feel qualified to judge. If the terms used below do not describe the candidate satisfactorily, please write your description on the line.

1. Personal appearance	Unsuitable	Somewhat unfavorable	Satisfactory	Favorable	Exceptionally impressive
2. Animation, Enthusiasm	No pep, disagreeable	Rather drab, colorless	Some enthusiasm and color	Usually vigorous, colorful, pleasing	Always full of life, colorful
3. Manners and Courtesy	Discourteous, crude	Sometimes thoughtless	Usually courteous	Thoughtful of others	Pleasingly gracious
4. Poise, Self-confidence	Ill-at-ease, very shy	Some lack of poise	Moderate confidence	Considerable poise	Fine poise, self-assured
5. Morality, Ethics	Cheats, untrustworthy	Questionable standards	Apparently trustworthy	Honest and trustworthy	Exemplary in moral standards
6. Sincerity	Insincere, artificial	Sincerity in doubt	Ordinarily sincere	No doubt of sincerity	Frank and sincere
7. Industriousness	Lazy	Indifferent	Average application	Industrious	Unusually diligent
8. Punctuality	Undependable in completing work or appointments	Sometimes not punctual	Usually punctual in completing work, appointments	Performs tasks promptly and meets appointments	Always most punctual
9. Reliability, Responsibility	Unreliable	Occasionally unreliable	Usually reliable	Assumes responsibility well	Completely reliable, responsible
10. Judgment, Common Sense	Judgment cannot be relied upon	Judgment is erratic	Usually shows sound judgment	Judgment can be depended upon	Usually shows superior judgment
11. Cooperativeness	Obstructive	Causes friction	Willing and fairly able	Cooperates effectively	Very willing and very able
12. Willingness to take Suggestions	Resentful	On the defensive	Takes without offense	Willing to accept and try	Eager to accept and to use
13. Leadership	Never takes the lead	Prefers to follow	Can lead if needed	Is a good leader	Outstanding as a leader
14. Friendliness	Unsocial	Impersonal and moody	Usually friendly	Genuine friendliness prevails	Always sincerely friendly
15. Sense of Humor	Fails to see humor	Slow to see humor	Usually appreciates a humorous incident	Quick to see humor in situation	Always appreciates a humorous incident
16. Self-control and Patience	Ill-mannered, unruly	Easily vexed, moody	Usually shows self-restraint	Emotionally stable, patient	Exceptionally stable, patient

(OVER)

17. Variety of Interests

Too few interests	Limited range of interests	Adequate range of interests	Variety of interests	Broad cultural, civic, and professional interests
-------------------	----------------------------	-----------------------------	----------------------	---

18. Voice, Expression

Irritating or indistinct	Understandable but unpleasant	Fairly clear and pleasant	Definitely pleasant and distinct	Exceptionally clear, well-modulated
--------------------------	-------------------------------	---------------------------	----------------------------------	-------------------------------------

19. Skill in Oral Communication

Incorrect, very poor	Limited, inaccurate	Good usage	Quite facile and accurate	Outstanding, versatile
----------------------	---------------------	------------	---------------------------	------------------------

20. Skill in Written Communication

Incorrect, very poor	Limited, inaccurate	Good usage	Quite facile and accurate	Outstanding, versatile
----------------------	---------------------	------------	---------------------------	------------------------

21. Creativeness

Very little imagination	Limited creative power	Resourceful	Often has some original ideas	Exceptionally creative
-------------------------	------------------------	-------------	-------------------------------	------------------------

22. Interest in Teaching

Just a vocation	Primarily for security	Interest primarily in one subject	Desire for social service	To aid youths' development toward desired goals
-----------------	------------------------	-----------------------------------	---------------------------	---

23. Democratic values as Related to Education

Little concern	Vague notion of importance	Concerned and thinking through	More active understanding	Full understanding, appreciation
----------------	----------------------------	--------------------------------	---------------------------	----------------------------------

24. General Qualification for Teaching

Ought not to go into teaching	Questionable prospect	Possible average success	Liberty to be above average	Should be outstandingly successful
-------------------------------	-----------------------	--------------------------	-----------------------------	------------------------------------

25. What special characteristics of candidates would likely be a significant hindrance in becoming a successful teacher?

26. What special characteristics of candidates would likely be a distinct advantage in becoming a successful teacher?

27. Additional comments:

Date _____ Name _____ Position _____

THIS IS A CONFIDENTIAL REPORT. PLEASE
RETURN IT IN A SEALED ENVELOPE TO:

(OVER)

APPENDIX B

EVALUATION OF STUDENT OBSERVERS

College Instructor _____

San Jose State College

Evaluation of Elementary School Curriculum and Observation

_____ has observed in the _____ School
in the _____ grade from _____ 19 ____ to _____ 19 ____ . This
evaluation form is designed for use by the student for self-evaluation, by
the resident teacher, and by the college supervisor.

	Superior	Above Average	Average	Below Average	Poor
I. Relationships with Children					
1. Understanding of children's needs....					
2. Tact and judgment.....					
3. Interest in children.....					
4. Ingenuity.....					
5. Enthusiasm.....					
II. Relationships with Staff					
1. Acceptance by school staff.....					
2. Tact and judgment.....					
3. Attitude toward profession.....					
4. Willingness to accept responsibility.					
5. Cooperation.....					
6. Sincerity.....					
III. Teaching Techniques					
1. Preparation and lesson planning.....					
2. Effectiveness of methods.....					
3. Knowledge of subject matter.....					
4. Alertness to children's activities...					
5. Contributions to the classroom.....					
6. Social control; classroom management.					
7. Forcefulness.....					
IV. Personal Qualifications					
1. Grooming.....					
2. Health.....					
3. Poise.....					
4. Emotional stability.....					
5. Friendliness.....					
6. Speech.....					
7. Promptness.....					

Check one, please: Student ☐ Teacher ☐ Supervisor ☐

Omit items on which there is no basis for judgment. Use reverse side for comments.

Signature _____

APPENDIX C

EVALUATION OF STUDENT TEACHERS

SAN JOSE STATE COLLEGE

18262

Evaluation of Student Teachers

_____ has taught the _____ grade at _____ School, _____ Semester, _____. This is the first _____, second _____ teaching assignment. My knowledge of the student is upon: Observing student teaching _____, conferring with student _____, reports of teachers _____, reports of supervisors _____. Mention other sources _____

INSTRUCTIONS TO RATERS: It is highly important that students be rated in ALL areas if possible. You have been given this rating sheet in advance so that you will make it a point to observe these students in as many of the areas as possible. If you have no direct information concerning an item, please make a judgment based on your best estimate of how the student would function in this situation.

RELATIONSHIPS WITH CHILDREN

Class management - social control.....
Recognition of individual differences..
Understanding of children's needs.....
Tact and judgment.....
Enthusiasm.....

Superior	Above Average	Average	Below Average	Poor	Comment if Desired

RELATIONSHIPS WITH RESIDENT TEACHER

Tact and judgment.....
Professional attitude.....
Willingness to accept responsibility...
Initiative.....
Sincerity.....
Poise and self-control.....
Response to suggestions.....

RELATIONSHIPS WITH STAFF

Acceptance by school staff.....
Tact and judgment.....
Professional attitude.....
Willingness to accept responsibility...

(Over)

TEACHING TECHNIQUES

	Superior	Above Average	Average	Below Average	Poor	Comment if Desired
Preparation and lesson planning.....						
Effectiveness of methods.....						
Knowledge of subject matter.....						
Room Appearance.....						
Housekeeping.....						

PERSONAL QUALIFICATIONS

Grooming.....					
Physical Vigor.....					
Attendance.....					
Poise and self-control.....					
Promptness.....					
Voice.....					

OTHER ACTIVITIES (Check to indicate participation)

<u> </u> P.T.A.	
<u> </u> Parent Conferences.....	
<u> </u> After School Activities.....	
<u> </u> District Grade Level Meetings....	
<u> </u> Workshops.....	
<u> </u> Faculty Meetings.....	
<u> </u> Others	

Would you recommend this person for your staff next year? YES NO

(Name)

(Position)

- BE SURE YOU HAVE FILLED IN ALL RATINGS -

APPENDIX D

TYPICAL PROJECT CALENDAR

TELEVISION UTILIZATION IN THE OBSERVATION PROGRAM FOR TEACHER EDUCATION

PHASE V

FALL SEMESTER CALENDAR, 1961

Registration	Thursday, Friday--Sept. 21, 22
Instruction Begins	Monday-----Sept. 25
Attitude scales administered (Experimental and Control Ed. 104 classes)	First class meeting
Give out Preliminary Rating Forms	First class meeting
Testing of experimental groups	Thursday---Sept. 28
Testing of control groups	 Arranged
Orientation of experimental groups	Tuesday-----Oct. 10
School visitation by experimental groups	Thursday---Oct. 12
Staff viewing and practice--Mrs. Cowan	Friday-----Oct. 13
Control groups report to 1st assignment	Monday, Tuesday-----Oct. 16
Staff viewing and practice--Mrs. Cowan	Monday-----Oct. 16
1st Teleleson for experimental groups	Tuesday-----Oct. 17
Practice--Mrs. Cowan	Wednesday--Oct. 18
2nd Teleleson for experimental groups	Thursday---Oct. 19
Practice--Mrs. Miller	Friday-----Oct. 20
Staff viewing and practice--Mrs. Miller	Monday-----Oct. 23

DESIGN EXPLAINED TO SCHOOLS PRIOR TO NOVEMBER 1

Group A instructor should begin contacting 1st residents re: lessons	Monday-----Oct. 23
3rd Teleleson for experimental groups	Tuesday-----Oct. 24
Instructors check on return of Preliminary Rating Forms by	October 25
Staff viewing and practice--Miss Barnwell	Wednesday--Oct. 25
4th Teleleson for experimental groups	Thursday---Oct. 26
Practice--Miss Barnwell	Monday-----Oct. 30
5th Teleleson for experimental groups	Tuesday-----Oct. 31
Experimental groups report to 1st assignment	Thursday---Nov. 2
Group A instructors pick up evaluation forms and envelopes from Mrs. Fabrizio by	Friday-----Nov. 3
Group A evaluations sent out	Tuesday-----Nov. 7
Group A ends 1st assignment	Thursday---Nov. 9
Group B & C instructors pick up evaluation forms and envelopes from Mrs. Fabrizio by	Thursday---Nov. 9
Control group instructors pick up evaluation forms and envelopes from Mrs. Fabrizio by	Thursday---Nov. 9
Veteran's Day	Friday-----Nov. 10
Group B and C evaluations sent out	Tuesday-----Nov. 14
Control group evaluations sent out ;	Tuesday-----Nov. 14
All day observation	Wednesday--Nov. 15
Instructors should confirm returned preliminary ratings by	Friday-----Nov. 17
Group B, C and Control end 1st assignment	Friday-----Nov. 17
Thanksgiving holiday	Thursday, Friday-Nov. 23, 24

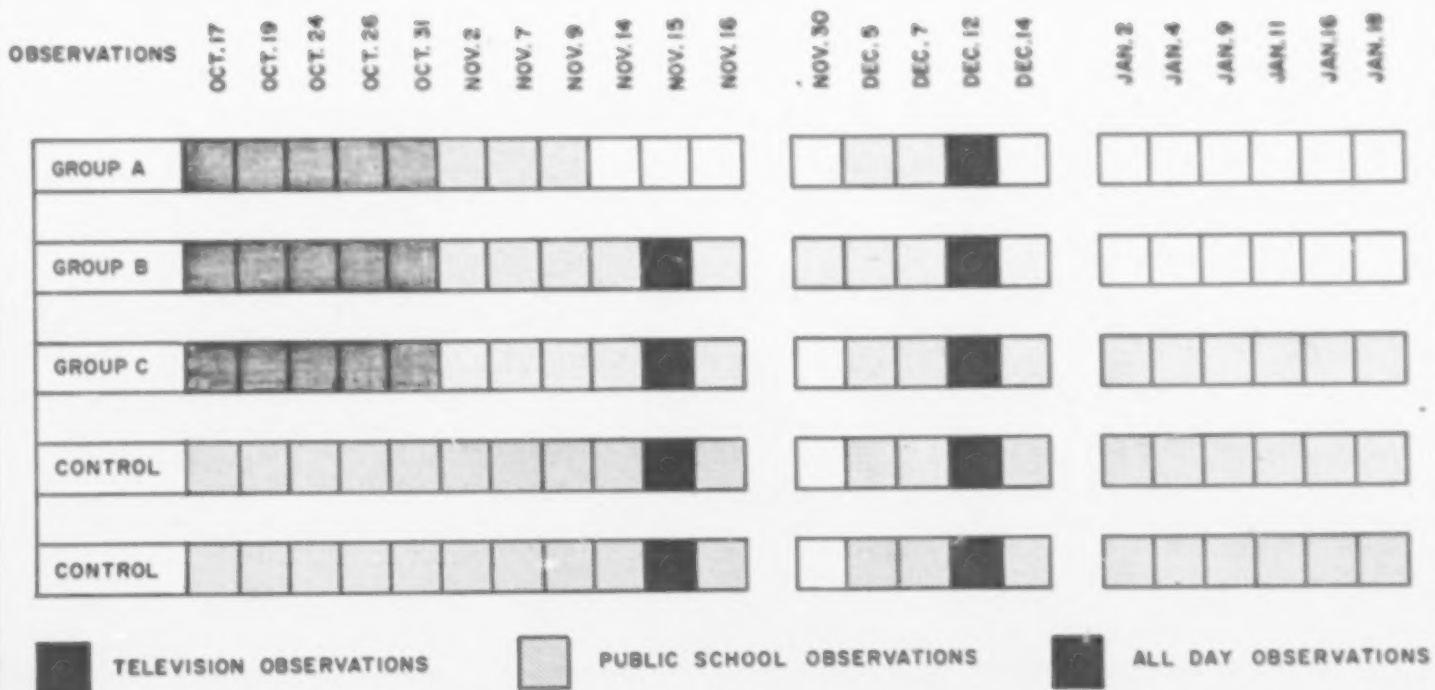
Group A instructor should begin contacting 2nd residents re: lessons by	Monday-----Nov. 27
Schools with groups A & B placements should receive design information before	Wednesday--Nov. 29
Instructors confirm return of 1st observer evaluation forms by	Thursday---Nov. 30
Group B report for 2nd assignment	Thursday---Nov. 30
Group A, C, and Control report for 2nd assignment	Monday-----Dec. 4
Group A & B instructor pick up evaluation forms and envelopes from Mrs. Fabrizio	
Group A & B evaluations sent out	Thursday---Dec. 7
All day observation (all groups)	Tuesday-----Dec. 12

Group A ends 2nd assignment	Tuesday ---- Dec. 12
Group B ends 2nd assignment	Thursday --- Dec. 14
Christmas holiday.	Dec. 16 --- Jan. 1
Group A and B instructors should check on returning evaluations by	Friday ----- Jan. 5
Group C evaluations picked up from Mrs. Fabrizio by.	Monday ----- Jan. 15
Control Group evaluations picked up from Mrs. Fabrizio by	Monday ----- Jan. 15
Group C evaluations sent out	Tuesday ----- Jan. 16
Control Group evaluations sent out.	Tuesday ----- Jan. 16
Group C and Controls end 2nd assignments	Friday ----- Jan. 19
Finals Begin.	Thursday --- Jan. 25

ALL EXPERIMENTAL AND CONTROL GROUP INSTRUCTORS CHECK ON AND CONFIRM RETURN OF ALL EVALUATION FORMS FROM THE PRINCIPALS AND RESIDENT TEACHERS BY FRIDAY, JANUARY 31, 1962

TELEVISION UTILIZATION IN THE OBSERVATION PROGRAM FOR TEACHER EDUCATION

A VISUAL REPRESENTATION OF THE STUDY DESIGN



APPENDIX E

REFINEMENT OF TECHNICAL PROCEDURES

REFINEMENT OF TECHNICAL PROCEDURES

As a result of establishing a rigid standard for maintenance of equipment during the entire experiment no programs were lost because of equipment breakdown--this in spite of the fact that in any electronic system as complex as this, there are manifold possibilities for trouble. Much attention could therefore be devoted to refinements of the system, and this section will describe the improved techniques which came about as a result of this attention.

TV Signals from Public Schools

Three remotely controlled cameras were placed in the public school classroom. Two of these were equipped with zoom lenses and one with a 3-lens turret. All camera controls were located in a mobile television control unit in a trailer placed outside the school so that no television personnel needed to be in the classroom during a telecast. Initially, several microphones were hung from the light fixtures or mounted on stands to avoid the necessity of having the teacher trail a microphone cable around the room. Microphones had to be hung high enough to be above the heads of students when they were standing.

It was considered desirable to accept the existing classroom environment, but because the public school buildings were not new, acoustical problems were created by large expanses of window, slate blackboard, plaster walls and ceiling, and hardwood floors. Environmental noise, both internal and external, interfered with the intelligibility of audio reception. From past experiences in television observation it was felt that the audio portion of the telecast would be the most difficult to perfect.

Five problems were present:

1. The noise from outside could not be effectively shut out by sealing the windows:
 - a. One window had to be open to allow cables to be run to the trailer outside.
 - b. Closing all the windows caused an accumulation of heat which quickly became burdensome.
2. The noise generated by movement of papers and feet masked the voices of participating pupils.
3. Children's voices were often soft or timid and microphones had to be placed close by to avoid electronic distortions introduced when volume controls were turned too high. When several

microphones were placed at different locations in the classroom, sound quality was impaired unless all microphones were turned down but the one optimally located to pick up a given child's voice. This made necessary constant attention to the volume controls; trying to select the one that would best pick up a given pupil presented enormous difficulties, and was never successfully accomplished.

4. The reverberation time in these rooms was estimated to be 3 to 5 times greater than optimum. Parallel surfaces added to the problem because standing waves were generated.
5. The several motors in the cameras used to control iris, focus, focal length, pan, and tilt made distracting noises when operated.

The first problem, that of outside noise, was alleviated by electronically filtering out low frequencies. Loss of low frequencies did not interfere with the intelligibility of the spoken word. By cutting off all frequencies below 150 cycles, the rumble of traffic was entirely eliminated without impairing speech reception.

The second, third, and fourth problems are interrelated, but aspects can be treated separately. Ambient noise within the classroom came mostly from shuffling papers and feet.

The possibility of carpeting the floor was explored, but had to be abandoned for three reasons:

1. No funds were available for wall-to-wall carpeting for every room, therefore,
2. Floor covering had to be a portable, temporary measure, and there was no easy way of making the edges trip-proof.
3. It was thought that sanitation would require that any carpets be cleaned frequently, and the schools were not equipped to clean carpets.

The problem of desk-level noise could be diminished by placing two sensitive, condenser microphones on floor stands and at head-level instead of suspending them well over the students' heads. Student voices during participation were generally directed toward the front of the room and the location at head-level put the microphones in a more favorable position to receive the voice rather than the noise.

A significant step toward the solution of the third problem, that of optimum number and placement of microphones, came with the use of a newly developed small, transistorized, wireless, lavaliere microphone. This microphone could be worn unobtrusively

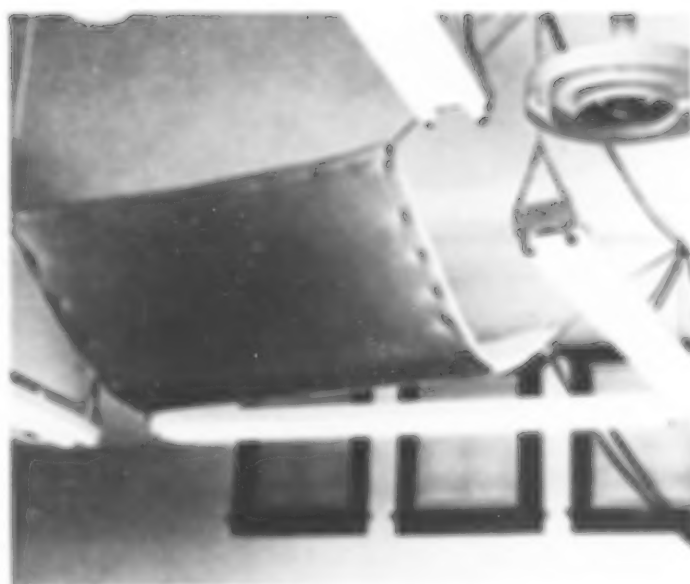


by the teacher who, relieved from the necessity of trailing a microphone cable, was able to move freely about the room. Everything he said was easily heard, and since the pupils near him could also be heard, he could either call on nearby pupils or could move to the vicinity of a participating pupil.

One possibility which was considered was that of mounting a "shotgun" microphone on a separate pan-tilt head or on a camera, and aiming it at a participating student. This was abandoned when it was determined that to be effective these microphones must be very long (more than three feet) and would be difficult to aim with precision. There was also an expressed concern that the appearance of this microphone might have been distracting.

The fourth problem, that of reverberation time in the classroom, might have been solved if capital outlay and jurisdiction had been extended. Careful acoustical treatment of walls, ceiling, and floors would have reduced the reverberation time to any desired level. In order to retain the necessary flexibility of being able to move into any classroom, however, either the acoustical treatment had to be temporary and portable, or else every room had to be treated.

Since any sound-absorbing material placed in the room provided a degree of noise control, 4' x 6' blankets were made by wrapping bleached muslin around a layer of 1" fiberglass and stapling it securely around the edge. Grommets were inserted in the corners of these blankets so that they could be suspended from the existing light hooks and to picture moulding by chains. These not only absorbed some of the ambient noise, but also reduced the likelihood of standing waves between the floor and ceiling. While they did help, they did not provide sufficient sound-absorption and were not as slightly as a permanent installation would have been.



In the judgment of the technicians, some of the problems, noise of the lens motors, could not have been solved with existing equipment. It would have been possible to enclose the cameras in soundproof covers, ("blimps"), but this would have shut off the circulation of air and would not have been entirely effective. Gears of various materials were tried, however, and the motors were slowed. Slowing the motors provided the greatest benefit. This problem was a characteristic of early equipment and it is now possible to obtain virtually silent remote control lenses.

It was felt that educational advantages would accrue by providing some added means of identifying specific children by superimposing their names while their pictures were on the screen. To accomplish this, an inexpensive flying spot scanner (Hickock



model 760 Video Scanner) was purchased. While this tool was designed for use in servicing television receivers, extensive modifications were made which involved removing the internal sync generator and rebuilding the deflection circuits to accept pulses from

an external sync generator. These modifications made the unit entirely acceptable for closed-circuit telecasting. The alternatives to this system would involve either an additional camera and slide projector or the use of a scanner with external sync. Both of these alternatives would entail roughly fifteen times as much capital outlay.

Installing the equipment in a classroom and later removing it was complicated by the large number of cables that had to be run between the classroom and the trailer. It was found that by using unused wires in the twenty-four conductor camera cable, the total number of cables necessary for cameras, camera controls, and microphones could be reduced from thirteen to six.¹ This materially reduced the time required for installation of equipment, and made feasible, although not technically desirable, the possibility of moving from one school to another and back on consecutive days.

To augment normal room lighting sufficiently to obtain adequate illumination for the video cameras, special VHO (very high-output) fluorescent fixtures were hung in the rooms. From four to six of these two-tube, eight foot, industrial units were used. To reduce their weight, the ballasts were removed from each fixture and relocated in steel boxes (one box for each four ballasts), which were placed in an inconspicuous location in the floor of the classroom; ten-foot heavy cables connected the ballasts with the fixtures. The fixtures were suspended by chains from hooks in the ceiling and were moved from room to room. This relatively complex procedure to obtain adequate lighting could, in permanent installations, be obviated by planning for a greater-than-normal number of conventional lighting fixtures.

Reception of TV Signals at the College

The college experimental student-observer groups were seated in the front of the auditorium. On the stage were three 23" television receivers; the middle one usually maintained an overview of the public school classroom using a wide-angle lens, while the two flanking receivers showed identical pictures taken through either of the zoom lens cameras in the public school classroom. It was necessary to use two incoming TV channels.

1. New advances are constantly being made in technology which allow for higher quality and greater ease in handling equipment. As an example, a new cable is now being marketed for use with color cameras which could, in this situation, be adapted to eliminate all other cables.

An overhead projector and, occasionally, a 16mm slide projector were used in the college auditorium for presentation of data.

When the Planning and Research Assistant wished to make comments to the student-observers, it was necessary to have a means of conveniently reducing the volume of sound coming from the television receiver. A simple hand-held switch, connected to the television speaker by means of a cord, short-circuited the speaker wires whenever the switch was pushed. Thus by holding her thumb on the switch the Planning and Research Assistant could reduce the television volume to a non-competitive level.²

Initially, for purposes of record-keeping and analysis, three tape recordings were made of each telecast:

1. A recording was made of the audio portions of the television program.
2. A recording was made of the commentary of the Planning and Research Assistant to the student-observers.
3. A recording was made of the remarks on the intercommunication channel.

Subsequently it was decided to record only the introductory and summary remarks, and the question periods.

A record of the telecast itself was desired, but since no facilities for kinescoping or videotaping were available, a device was developed for making a tape recording of the audio portion simultaneously using one track of the tape to trigger a camera making single-frame exposures of the video picture. These exposures were made on 16mm film at the rate of one exposure per second. When played back on a tape recorder connected to an automatic 16mm filmstrip projector, the effects of motion were clear, even though there was no illusion of motion.

Communication Between College and Public School

The Planning and Research Assistant at the College worked very closely with the Television Coordinator in the trailer. Since it was the Television Co-

2. It should be noted that the longer the cord leading from speaker-to-switch the smaller is the effective reduction in volume, due to the impedance of the wire. Over a long distance, another means of attenuation would have to be employed.

ordinator's task to anticipate television requirements in time to relay them to the technician who actually operated the cameras, constant telephone intercommunication was provided by means of headsets. In this way they could talk directly to each other. In addition, the Television Coordinator was able to hear the Planning and Research Assistant's comments to the student-observers, and the Planning and Research Assistant was able to hear the Television Coordinator's instructions to the technician.

Originally, the intercommunication line provided the only link between the College and the mobile unit, but the occasional need for a technician at the College to communicate directly with the technician in the trailer without interfering with the Planning and Research Assistant and the Television Coordinator made it necessary to find other means of communication. A private telephone line was installed from the College to the trailer, but this proved expensive since the mobile unit moved about frequently and installation charges were made at each move. A solution was found when a pair of two-way citizen's band radio units were purchased for technical communication.

Another technique evolved from telephonic intercommunication. Twice during each two and one-half hour period of televiewing, the public school children were dismissed for recess. At these times the public school teacher sat before a camera, picked up a telephone hand set, and talked directly to the Planning and Research Assistant and student-observers in the college auditorium. At this time, questions from the student-observers were relayed to the public school teacher by telephone and they were answered via television. This telephone in the public school classroom was an extension of the circuit between the mobile unit and the College. Originally this phone was equipped with a light so that during a telelesson a teacher's assistant could be signalled so that furniture could be arranged, or other modifications could be



made in the interest of better telecasting. However, after experience both light and teacher's assistant were omitted as distracting and unnecessary.

Because this was a controlled experiment, and because the experimental sections were selected by accident of registration, it was essential that no college student be allowed to see the telelesson who had any chance, however remote, of one day being enrolled in one of the experimental classes. Also, certain periods were set up prior to the formal telelessons for technical practice and staff viewing. Inasmuch as the public school teachers were paid on the basis of formal telelessons and of staff viewing, absolute controls had to be maintained to insure that the signal would not be sent over the campus-wide distribution system. The problem was solved simply by running a separate coaxial cable from the television distribution center to the viewing auditorium, thus entirely bypassing the campus-wide distribution system.

APPENDIX F

ANALYSES OF VARIANCE AND
OF COVARIANCE, F-VALUES

ANALYSES OF VARIANCE AND OF COVARIANCE, F-VALUES

Control Measures Analysis of Variance F-Values by Group		
Measures	F-Values	
	Five Group Means	Exp. Vs. Cont. Means
C. Q. T. Total	.79	.63
Verbal	1.82	1.07
Information	.66	1.03
Numerical	.76	.47
Grade Point Average	1.54	5.31**
Faculty Rating Sheet	.15	.00

**Significant at the .01 level

Criterion Measures Analysis of Covariance F-Values by Group		
Measures	F-Values	
	Five Group Means	Exp. Vs. Cont. Means
Eval. of Elem. Sch. Curr. and Ob.	.64	1.55
Eval. of Student Teachers	.27	1.00

